Demand Patterns in Spain

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The DEMPATEM research project (2001-2004) addressed *Demand Patterns and Employment Growth: Consumption and Services in France, Germany, the Netherlands, Spain, the United Kingdom and the United States.* It was a joint undertaking of the Universities of Amsterdam, Utrecht, Oxford and Paris-I Sorbonne, and the University Carlos III in Madrid, University College London and 17th Street Economics, Washington DC. The project was financially supported by the Socio-economic Key Action of the Fifth Framework Programme of the European Commission (HPSE-CT-2001-00089). List of the full project membership and all working papers can be found at the end of the paper

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INTRODUCTION

This paper contains the Spanish contribution to the consumption part of the DEMPATEM project. The budget share of services as a whole has increased in Spain from 20.94 in 1980-81 to 27.91 in 1990-91, which represents a 33.3% increase. As much as 55.4% of the observed change can be explained by income effects and composition changes, while 27.5% can be attributed to the Baumol effect, namely, the fact that services' prices have generally increased at a larger rate than goods' prices. The 17.1% of the change left unexplained by these factors can be attributed to the substitution effect induced by changes in relative prices, changes in preferences, and other unknown factors operating during this period.

On the other hand, U.S. households devote a much larger share of their budget to services. Their services share in 1980 and 1990 is 14.1 and 13.9 percentage points larger than the Spanish one, respectively. In 1980, income effects together with changes in demographic and employment patterns can explain 53.2% of this difference. In 1990, differences in demographic and employment variables, as well as differences in household expenditure inequality between the two countries account for 33.2% of the difference in observed services' shares. However, during the 1980s the U.S. experienced a reduction in the household expenditures allocated to the non-durable goods and services covered in the DEMPATEM project for international comparisons. Using PPP exchange rates, the level of mean household expenditures in 1990 is smaller in the U.S. than in Spain. This gives rise to a reduction of 1.5 percentage points in the services share computed according to Spanish consumption patterns with U.S. mean household expenditures.

These results are robust to the following modifications: (i) the aggregation of certain goods and services to ameliorate the problem of zero expenditures in the original 17-dimensional commodity space; (ii) the introduction of an additional set of explanatory variables beyond the ones common to all countries in the project, and (iii) the estimation of a demand system at reference prices instead of at current prices.

The paper is organized in five Sections and three Appendixes. Section I describes the main data source, the *Encuestas de Presupuestos Familiares* (EPF) collected by the *Instituto Nacional de Estadística* (INE) in 1973-74, 1980-81 and 1990-91. Measurement problems in relation to household expenditures and incomes are discussed. Section II presents the evolution of consumption expenditure patterns at current prices using two commodity classifications. The first one, fully described in Appendix A, classifies all commodities into 8 goods and 12 services. In the second one, used for international comparisons in the DEMPATEM project, expenditures in housing, health, education and durable goods are excluded from total

household expenditures. In the Spanish case, the magnitude to be explained by econometric methods is the change in budget shares of 8 non-durable goods and 9 services between 1980-81 and 1990-91. Section III is devoted to the introduction of a number of potential explanatory factors, including a) demographic and other household characteristics, b) income (or household expenditures) effects, c) changes in household expenditures inequality, d) changes in relative prices holding quantities demanded constant, referred to as the Baumol effect as in Blow *et al.* (2003), and e) other changes. Sector IV contains a discussion of the estimated budget elasticities for the 17 commodities in 1980-81 and 1990-91, the explanation of the increase in the services share over the period, and the comparison of this magnitude between Spain and the U.S. in 1980 and 1990. Appendix B describes how the Baumol effect has been constructed in the Spanish case, while regression results for the 17 Engel curve system are relegated to Appendix C. The final Section V studies the robustness of the previous results.

1 HOUSEHOLD EXPENDITURES AND INCOMES

The Spanish consumption data for this project comes from three large household budget surveys collected in 1973-74, 1980-81 and 1990-91 by the INE with the main purpose of estimating the base weights of the official system of Consumer Price Indices.[1] These surveys consist of 24,151, 23,707, and 21,155 household observations representative of a population of approximately 9, 10, and 11 million households, respectively, occupying private residential housing in all of Spain, except the 1973-74 EPF that does not cover the northern African cities of Ceuta and Melilla.

The EPFs are spread out uniformly over a period of 52 weeks. All household members of 14 or more years of age are supposed to record all expenditures that take place during a sample week. Then, in depth interviews are conducted to register past expenditures over reference periods beyond a week and up to a year. From that information, the INE estimates annual household total expenditures.

Recently, bulk purchases of food and drinks for home consumption have been gaining popularity among certain strata from the more urbanized population. This might not cause a major problem in the past but, concerned with the gradual extension of this practice during the 1980s, the INE collected partial but valuable information on bulk purchases for the 1990-91 EPF. However, this information is not taken into account in the estimates of annual food expenditures contained in the public use tape constructed by the Institute. Fortunately, Peña and Ruiz-Castillo (1998) have studied this issue in some detail, and have produced improved estimates of food and drinks annual expenditures using all the available information on bulk purchases . These estimates have been incorporated in the household total expenditures measure for 1990-91.

In the income side, a maximum of four income recipients are asked about the income earned from different sources during the year prior to the sample week.[2] Therefore, household expenditures and household income are not estimated for the same period. It turns out that INE's estimates of total expenditures for more than 60% of households are greater than household income. Moreover, contrary to all expectations, Sastre (1999) presents evidence showing less total income inequality than total expenditure inequality.

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1 All data files and documentation can be obtained at http://www.eco.uc3m.es/english/research/epf.html. For further details on the EPFs, see the official publications INE (1975, 1983, 1992).

2 Income from all sources is reported net of income tax withdrawals, and labor income is also net of social security contributions. during 8 successive quarters. The task of constructing annual estimates for calendar years from this panel's data in

The work by Sanz (1996) indicates that, in relation to the National Accounts, the 1990-91 EPF seriously underreports household consumption expenditures and, above all, household disposable income. Aggregate disposable income for 1990 according to the EPF is 28.6% less than the National Accounts figure for that year. Discrepancies are rather different according to income source. For example, wage earnings net of social security contributions and indirect taxes in the EPF represent 88.5% of the National Accounts, social transfers represent 66.8%, and capital and property income represent only 53.8%. On the other hand, aggregate consumption expenditures in 1990 according to the EPF are 18.6% less than the corresponding magnitude in the National Accounts. In particular, the EPF only captures 57.5% of private health expenditures and 45.8% of other goods and services.

Finally, individuals working in the underground economy might be inclined to underreport income, but they need not be particularly prone to underreport expenditures. Therefore, expenditures for those individuals can be expected to be better measured than income. At the same time, respondents are expected to report equally well expenditures on goods and services acquired in either the underground or the regular economy. Therefore, it can be conjectured that the activities of both demanders and suppliers of the underground economy are better captured through the expenditure side.

In brief, it appears that the EPFs do a better job in the measurement of household expenditures than in the measurement of household income.

It is important to notice that the EPF have been discontinued. Instead, starting with the third quarter of 1997, the INE has been conducting a rotating panel of 7,000 households per quarter where each household is interviewed.

now under way. Unfortunately, data for 1999 is expected to become available after the end of this project. In the meanwhile, the more complete information for Spain refers to 1980-81 and 1990-91.

2 THE EVOLUTION OF EXPENDITURE PATTERNS IN SPAIN

2.1 THE DEMPATEM COMMODITY CLASSIFICATION

The EPFs have a rather wide concept of total expenditure, including expenditures on items not covered by the Consumer Price Index (like funeral articles; contributions to non-profit institutions; gambling expenditures; fines; hunting, fishing and other fees), as well as a number of imputations for home production, wages in kind and subsidized meals at work. The total number of commodities in the 1973-74, 1980-81 and 1990-91 EPFs is 170, 632 and 918, respectively.

In this project, a commodity classification consisting of 8 non-durable goods and 9 services has been agreed upon. For descriptive purposes only, a more detailed classification consisting of 8 goods and 12 services has been also considered. A description of the EPF commodities included in each detailed DEMPATEM category can be found in Appendix A. The left hand panel of Table A1 in the Appendix presents the budget shares for the years 1980-81 and 1990-91 at current prices according to this detailed classification.[3]

The comparability of consumption expenditure patterns across countries is made difficult because of differences in the institutional characteristics in the provision of three major services: housing, health, and education. On the other hand, the explanation of expenditure patterns with the help of econometric methods is best suited for current consumption expenditures, rather than expenditures in the acquisition of durable goods. The remaining of this subsection is devoted to a discussion of these issues in the Spanish case.

2.1.1 HOUSING

Table 1 presents housing ownership percentages for different decades in Spain.

Table 1. Housing Tenure in Spain

Year	Ownership (%)	Rental (%)	Other (%)
1960	50.5	42.5	6.9
1970	63.4	30.1	6.5
1981	73.1	20.8	6.1
1991	77.5	14.9	7.6

Source: INE, Housing Census, 1960, 1970, 1981, 1991.

Several features characterize the provision of housing:

[3] *The EPFs include a weight variable, or blowing up factor that serves to go from sample to population statistics. Although unweighted and weighted averages are very similar,*

At present, ownership is by far the most common tenure regime in Spain. This is the result of several factors. The more important one is that, due to rent control policies, offering accommodation for rent has not been a very profitable activity. Starting in 1920, a freeze on rents was decreed. Tenants were protected by a forced renewal clause for their entire life that was automatically extended in favour of their direct descendants for two generations. This continued after the Civil War in 1939, and lasted until a *Law of Urban Leasing* was passed in 1964. The legislation allowed for free rent bargaining in all new contracts signed after 1964, as well as for annual rent revisions under government ceilings that followed closely the housing component of the CPI. However, the forced lease renewal policy was maintained so that the property was often unavailable to the owner for more than 50 years. Moreover, eviction was a long and complex process. As a result, rental accommodation almost disappeared by the mid-80s. In weighted magnitudes are used throughout in the sequel.

1986, an amendment was introduced abolishing forced lease renewals and some vacant houses entered the rental market. In 1994, forced lease renewals up to a maximum of 5 years were reintroduced in a New Law of Urban Leasing. On the other hand, housing policies in the last two decades have focused on facilitating the access to home-ownership via a policy of *Officially Protected Housing* (OPH), improvements in the mortgage market, and more recently the granting of generous tax benefits to home-owners in the personal income tax.

- High housing prices compared to family income made difficult the access to housing ownership. Acknowledging the situation, since 1950 governments developed a policy of *Officially Protected Housing* (OPH) that took numerous variants. The main policy channel consisted of interest rate subsidies and fiscal exemptions in favour of suppliers. In order to avoid that all gains accrue to developers, a limit in the sale price of OPH houses and some direct subsidies for the down payment were imposed. Public and private development co-existed. In the mid 1980s private developers reverted mainly to the more profitable construction of free (non OPH) housing. In 2002 barely 5% of new constructed houses were OPHs.

- Spain presents *an almost total absence of public rental accommodation* but there is a large percentage of OPH housing facilities under the ownership regime. Some are for the poor, but most of this stock is owned by the middle class, or even the rich.

- Interest paid on mortgages can be deducted from the tax base up to a certain limit. This means in some cases a 3 to 4 percentage points decrease of the nominal interest rate

paid on mortgages. Moreover, homebuyers can deduct 15% annually of their investment (with some upper limit) from their income tax bill. These deductions apply to all kinds of houses and have proven to be fairly regressive.

- Housing construction accounts for over 5% of GDP and public expenditure on housing about 1% of GDP.

According to the EPF, 29.66% of all houses were OPH in 1990 -1991. Table 2 reports home ownership by head of household's age. As expected, the ownership rate increases with age, while the proportion of rental housing is considerably greater among the young and declines with age. However, this proportion rises again for the oldest households who occupy pre - 1964 rental housing and benefit from strict rent control housing policies.

Table 2. Home ownership by age, 1990-1991

Total		<30	30-40	41-50	51-65	>65
Ownership (%)	77.79	47.31	70.81	80.83	84.79	80.46
Rental (%)	14.99	35.33	18.53	13.35	10.44	13.69
Other (%)	7.21	17.36	10.66	5.82	4.78	5.84

Market rents provide an appropriate measure of expenditures on housing services in rental housing. But owner-occupied and other non-rental housing poses a difficult evaluation problem, above all in countries like Spain where these tenure modes are so prevalent. Fortunately, in the Spanish case the EPFs offer an acceptable solution to this classical evaluation problem: the self imputed rental value declared by the occupants of dwellings in these tenure modes when asked about the rent they think their house would carry at the time of the interview in the rental market.[4]

Nevertheless, other countries in this project lack an acceptable measure of the value of the flow of housing services in non-rental dwellings. This has led to the exclusion of housing from the list of commodities to be studied by econometric methods.

Public expenditure on education has increased considerably in Spain but it continues to be low for European standards (3.8% of GDP in 1980, 5.68% in 1995). Instructors of all levels represent 4.7% of total employment. The sector is in the middle of an ambitious reform and a decentralization process. At the moment, there are 10 years of compulsory education (from 6-16 although until 1990 it was only compulsory until age 14), and two extra years of

[4] Exactly this procedure is also followed by the Bureau of Labor Statistics in the U.S. in answer to a similar question asked from the occupant in the Consumer Expenditure Survey.

non-compulsory secondary education (regular and vocational) before university. Enrolment is not compulsory before 6 although, as can be seen in Table 3, 100% of children older than 4 attended some form of school in 1994.

Table 3. Education Enrollment by Age

Enrollment (%) / Age	3	4	5	6–13	14	15	16	17
1980	15.6	69.3	92.2	100	79.6	65.6	51.5	47.2
1994	57.3	100	100	100	100	96.8	80.2	71.3

Source: Spanish Ministry of Science and Education.

Public and private production of education coexists at all levels in different proportions. Public education before university is tuition free but it does not cover textbooks and school materials. Public universities are subsidized and students pay low tuition fees, which vary by location and degree (390-700 euro per year). There are two types of private centres for the provision of education during the compulsory years: *"concertados"* and *"no concertados"*. The first ones have an agreement with the government: they are partly financed by the state and in exchange they agree to follow practices similar to those of the public centres, including no tuition fees. Private enrolment at this level is 35% (only 4% in pure private centres). For the two extra years of secondary education private enrolment decreases to 30%. At the university level, private schools account only for 10% of enrolment, while they represent 34% for the pre-school years. The state provides need-based grants (for textbooks, accommodation, tuition, etc.) at all levels of education.

The university sector has grown considerably in Spain. In 1950, only 3% of 18-20 year-old attended college, while in 1995 the number was over 45% (vocational training is very discredited at the moment and youth unemployment is very high). In 1996-1997 there were 56 universities: 46 were public and 10 private. The 6 biggest public universities have 1/3 of the student population. 9% of the students follow humanities, 53% law and social sciences, 21% mathematics and sciences, 8% are in the health field and 8% pursue technical degrees. 52% of the students are female.

Table 4. Number of Student at Universities

TABLE 4. NUMBER OF STUDENTS AT UNIVERSITIES

Year	1960	1970	1980	1990	1995
Number	77,123	213,159	649,098	1,137,228	1,529,769

Source: Spanish Ministry of Science and Education.

Source: Spanish Ministry of Science and Education.

This section concludes with Table 5, a summary of the recent evolution of public expenditure on education by student at different educational levels in Spain.

Table 5. Public Expenditure on Education by Student (In EUROs)

	1992	1993	1994	1995	1996
Total	1640.16	2049.45	2318.70	2537.47	2723.19
Pre-school	1433.41	1553.62	1821.07	1891.99	1860.73
Elementary	1453.25	1611.91	1885.37	1976.73	2185.28
Secondary	1938.87	2132.39	2392.03	2598.18	2843.39
Post-secondary	2627.02	2695.54	2940.15	3718.46	3895.76

Source: Spanish Ministry of Science and Education.

Large institutional differences in the provision of education within different countries in the project, has led to the exclusion of this commodity from the classification used to portray the evolution of private consumption expenditures.

2.1.3 HEALTH

Since the beginning of this century, Spain has been developing a public health care system that has become more comprehensive and has assumed more social responsibility, in the belief that health care is a citizen's right. After the return of democracy, the Ministry of Health was reconstructed, and the National Institute of Public Health Care (INSALUD) was created to assume the managerial functions of public health care. Since 1986, the Spanish Health System has lived a transformation from a Social Security System to a National Health System with public production of health services. In 1982, the INSALUD covered 86% of the Spanish population and 31% of hospital beds, which were in the best-equipped hospitals in the country. Today, 98.9% of the population has the right to receive health service free of charge (no co-payment of any type). The INSALUD also pays for 60% of the cost of prescription drugs for workers and 100% for retired people and persons with chronic diseases. Some health services are excluded from the public system (mainly dental, elective plastic surgery and some psychiatric services). Patients are assigned to primary care centres based on residency and they need referrals to see specialists. The system suffers from the well-known problems common to National Health Systems (waiting lists, limited choice, etc.).

The universalization of the service, together with the growing demands of the population and the generalized incorporation of new technologies has produced a huge increase in health spending. All this means that the National Health System is at present undergoing changes and new assessments. Decentralization in the management by Autonomous Communities is now almost complete.

Private production of health has also experienced an expansion. People can access the private supply paying for it directly or through private insurance networks. Certain

population groups (some public workers and employees of large corporations) have private insurance provided by the employer, while some citizens buy their own private insurance in addition to the care received through the public system.

Table 6. Public Expenditure on Health (%GDP)

Year	1980	1985	1990	1995
Total Expenditure (%)	5.7	5.7	6.6	7.6
Public Expenditure (%)	4.5	4.6	5.3	6.0

Expenditures in pharmaceutical products, private medical services and private health insurance are the ones covered in the EPFs. As in education, large institutional differences in the provision of health care within different countries in the project, has led to the exclusion of this commodity from the classification used to portray the evolution of private consumption expenditures. This section closes with some comparative statistics in Table 7.

Table 7. Some Comparative Statistics

	Beds (per 1,000 people)	Doctors (per 1,000 people)	Pharmacists (per 100,000 people)	No. People per Pharmacy
France	9.7	2.7	90	2,555
Germany	10.4	3.2	60	2,541
Netherlands	11.4	2.5	20	10,572
Spain	4.3	3.8	99	2,142
UK	5.3	1.6	21	4,766

Carles Murillo (1998), "El sistema sanitario en España ", FEDEA.

Employment in the Education and Health Industries

Table 8 presents the evolution of employment in health and education in Spain. It can be observed that employment in education as a percentage of total employment has stayed fairly constant over time, while employment in the health sector has become much more important.

Table 8. Employment in Education and Health. Selected Years.

Employment (thousands)	1986	1988	1990	1995	1997
Education (for sale)	233	232.7	245.3	231	240.5
Education (not for sale)	362.2	407.7	457.2	524.9	530.8
Education (total)	595.2	640.4	702.5	755.9	771.3
Health (for sale)	80.4	87.7	102	258.6	270.5
Health (not for sale)	301.3	333.5	388.9	548	562
Health (total)	381.7	421.2	490.9	806.6	832.5
Total	11,298.1	12,205	13,078	13,733.7	14,337.3

Employment (% of total)					
Education (for sale)	2.06	1.91	1.88	1.68	1.68
Education (not for sale)	3.21	3.34	3.50	3.82	3.70
Education (total)	5.27	5.25	5.37	5.50	5.38
Health (for sale)	0.71	0.72	0.78	1.88	1.89
Health (not for sale)	2.67	2.73	2.97	3.99	3.92
Health (total)	3.38	3.45	3.75	5.87	5.81

Source: Spanish National Accounts.

2.1.4 THE TREATMENT OF DURABLES

The ownership percentage of selected durable goods according to the 1990-1991 EPF is summarized in Table 9. Some information about payment options is also included. In particular, for those who own the good, the percentage that paid for it in full and the percentage that used instalments are reported.

Table 9. Durables Ownership, 1990-1991

Durables	Owns	One Payment (%)	Installment (%)
Washing Machine	92.49	72.23	19.15
Dishwasher	9.20	81.55	10.56
Dryer	3.01	73.91	9.64
Refrigerator (with freezer)	81.13	70.11	19.59
Refrigerator (without freezer)	17.05	72.82	15.62
Computer	10.96	71.2	15.32
Car (1)	63.18	56.07	40.5
(>1)	9.92		
Motorcycle	15.95	65.2	25.89
Bicycle	6.20	76.13	3.00
TV	92.25	66.77	24.3
Video	44.44	66.74	23.21
Radio	59.05	72.06	1.88
Stereo	30.89	70.59	16.00
Camera	41.89	67.13	0.97

In explaining household consumption patterns, discontinuous expenditures on some durables, whose occurrence may distort heavily the total, are best considered investment rather than consumption. These refer to current acquisitions of cars, motorcycles and other means of private transportation (commodity 4a, in Table A1 in the Appendix), Furnishing (5a in that Table), Appliances (5b), Books, newspapers and computers (6a) Audio and video equipment (6b), Toys and hobbies (6c), and Holiday goods (6d), as well as house repairs financed by either tenants or owner-occupiers (11c).

Ideally, the elimination of current expenditures on the acquisition of those durables should be accompanied by the inclusion of an estimate of the consumption services currently provided by these investment flows as well as by the stock of household durables acquired in the past. In Spain this can only be done for housing -without doubt the more important household durable - by means of the imputed rental values described before. However, as was pointed out, housing has been excluded from the final list of commodities.

2.2 DEMAND PATTERNS

For the reasons just analysed, in what follows household total expenditures will exclude housing, education, health, and the durable goods mentioned above. The resulting concept will be referred to as *household restricted expenditures*. The evolution of expenditure patterns in Spain in the 8 goods and 12 services already introduced in Appendix A, as well as the expenditures in the excluded categories are presented in Table 10. This Table includes also the allocation of total household expenditures among the 17 DEMPATEM commodities as well as the excluded commodities. Instead, Table 11 presents the allocation of restricted expenditures among the 17 DEMPATEM commodities.

The following points are worth noticing:

1. In the three surveys, average household total income is smaller than household total expenditures. As was pointed out before, this is interpreted as a signal that household income is badly underreported in the Spanish EPFs.

2. From 1973-74 to 1990-91, household total expenditures have increased more than household restricted expenditures (32% versus 21%, respectively). Given the recession that started in Spain after the first oil crisis in 1974 and lasted until the mid -1980's, most of the increase should be attributed to the change between 1980-81 and 1990-91 (23% and 19%, respectively). In any case, the difference in growth rates between total and restricted expenditures during the 1973-74/1990-91 period is mostly due to the above average increase in housing (109%) and education expenditures (49%).

3. The share of private transportation and entertainment goods in household restricted expenditures increases by 75% and 63%, respectively, while the share of personal goods and clothing and footwear increase by 31% and 25%, respectively. These four goods represent 14.62% of the budget in 1973-74 but 20.11% in 1990-91 i.e. a percentage increase close to 38%. Nevertheless, the weight of all goods as a whole goes down by 10 percentage points during the period, or a relative 12% decrease. This is essentially due to the decrease in the share of good 1 (food and non-alcoholic drinks) and good 2 (alcohol and tobacco), that represent 59% of the budget in 1973-74 but only 43% at the end of the period.

4. Corresponding to the decrease of the goods' share there is an increase in the services' share. The proportion of the budget devoted to all services in 1973-74, 1980-81 and 1990-91 goes from 18% to 21% and 28%, respectively, i.e. an increase of 10 percentage points over the 16 years period. Among the services, those that increase proportionally more than the average (53%) are communications (228%), miscellaneous (130%), private transport (128%), and holiday services (109%). These four services as a whole represent 4% of the total budget in 1973-74 but 10% in 1990-91.

Table 10. Average Household Expenditure on Durables, Housing, Health and Education, and the Allocation of Total Expenditure over Goods and Services

	1973-74	**1980-81**	**1990-91**	**% Change 1970-1990**	**% Change 1980-1991**
Averages (in 1990-91 Pesetas)					
Expenditure on Durables	157,998	183,940	199,932	26.54	8.69
Housing Expenditures	234,748	327,519	491,077	109.19	49.94
Health Expenditures	51,570	49,344	38,438	-25.46	-22.10
Education Expenditures	43,564	33,694	65,085	49.40	93.16
Expenditure on Non-Durables and Services	1,458,056	1,479, 234	1,765,302	21.07	19.34
Total Expenditures	1,945,935	2,073,731	2,559,859	31.55	23.44
Total Income	1,619,151	1,835,872	2,131,784	31.66	16.12
Share of Total Expenditure (%)					
Expenditure on Durables	6.36	7.03	6.10	-4.09	-13.16
Housing Expenditures	11.98	15.81	20.21	68.70	27.78
Health Expenditures	2.68	2.23	2.43	-9.33	9.02
Education Expenditures	1.66	1.23	1.10	-33.73	-10.32
Restricted Expenditure on Non-Durables and Services	77.32	73.70	70.15	-9.27	-4.81
Non-Durables	63.23	58.28	50.41	-20.48	-13.50
Services	14.09	15.42	19.74	40.10	28.04

Table 11. The Allocation of restricted Expenditure over Non-durable Goods and Services

Shares of Goods and Services (%)	1973-74	1980-81	1990-91	% Change 1970-1990	% Change 1980-1991
Food and non-alcoholic beverages	54.31	47.88	39.53	-27.21	-17.44
Alcoholic beverages and tobacco	5.03	3.73	3.43	-31.81	-7.88
Clothing and Footwear	9.76	11.16	12.20	25.00	9.27
Private Transport Goods	2.38	4.47	4.18	75.63	-6.40
Furnishing and Appliances	2.87	3.29	3.07	6.97	-6.66
Entertainment Goods	1.48	1.83	2.42	63.51	32.28
Personal Goods	1.00	1.01	1.31	31.00	30.13
Home Energy	4.91	5.69	5.94	20.98	4.37
Food and beverages away from home	7.08	6.66	10.72	51.41	61.02
Holiday Services	0.42	0.37	0.88	109.52	137.73
Household Services	1.65	2.29	1.86	12.73	-19.04
Personal Services	0.77	0.76	0.93	20.78	21.51
Public Transport Services	2.20	1.89	1.50	-31.82	-20.75
Private Transport Services	1.95	3.89	4.44	127.69	14.12
Communication Services	0.60	1.30	1.96	226.67	50.40
Entertainment Services	2.25	2.41	2.54	12.89	5.41
Miscellaneous goods and services	1.34	1.35	3.08	129.85	127.50
NON DURABLE GOODS	81.75	79.06	72.09	-11.82	-8.82
SERVICES	18.25	20.94	27.91	52.93	33.29

3 POTENTIAL EXPLANATORY FACTORS

The next question is to investigate the potential explanatory factors of the trends just described which were discussed in Blow *et al.* (2003): the so-called Baumol effect, income effects, and changes in household characteristics.

3.1 INCOME (OR HOUSEHOLD EXPENDITURES) EFFECTS

As pointed out in the previous section, the services' budget share in current prices goes from 21% in 1980-81, to 28% in 1990-91. One possible explanation lies in income (or household expenditures) effects. To facilitate a first assessment of this possibility, Table 12 presents the budget shares by quintiles of the household restricted expenditures distribution.

The possible relation between budget shares and household restricted expenditures does not take into account differences in household size. In other words, it is as if there were infinite economies of scale in consumption within the household. Instead, if we were to focus on the distribution of *per capita* household restricted expenditures, then the assumption would be that there are no economies of scale at all. Therefore, it seems interesting to explore the possible connection between budget shares and *equivalent household restricted expenditures*, defined by the ratio of household restricted expenditures over the square root of household size. The relevant information is in Table 13.

Clothing and footwear, private transport, entertainment and personal goods seem to be *luxuries* (whose shares increase with quintile of the equivalent restricted expenditures), while home energy y and food and non-alcoholic beverages are *necessities* (whose shares decrease with quintile of the equivalent restricted expenditures). Goods as a whole behave as necessities. Consequently, all services behave as luxuries.

Thus, if household restricted expenditures had increased systematically during the period, then these regularities provide *prima facie* evidence in favour of income effects as an explanation of the increased services' share. This is indeed the case for the sub -period 1980-81 to 1990-91, but not so for the first sub-period in which household expenditures remained essentially constant. It is worthwhile to review this relationship *within* quintiles, as it is done in Table 14 where only the data for services as a whole in the lower panel of Table 13 is isolated.

Overall, the relationship between the increase in services' budget shares during the 1980s and the increase in equivalent household restricted expenditures is very clear in all quintiles.

Moreover, at least part of the increase in services' budget shares during the first sub-period in the lower two quintiles might be attributed to the slight increase in equivalent expenditures. But this is not the case in the upper three quintiles in that sub-period, where the services' budget shares increase takes place in spite of the constancy of equivalent expenditures.

Table 14. The Relation between Services' Budget Shares and Equivalent Household Restricted Expenditures within Quintiles in different years

	Q1	Q2	Q3	Q4	Q5
Services' Budget Shares					
1973-74	8.9	13.7	17.8	21.4	29.4
1980-81	11.4	16.0	19.5	24.5	32.3
1990-91	16.5	23.2	27.9	31.9	38.3
Mean Equivalent HouseholdRestricted Expenditures					
1973-74	453	885	1,248	1,717	2,976
1980-81	480	912	1,286	1,736	2,873
1990-91	555	1,064	1,507	2,058	3,399

Table 12. Budget Shares by Quintiles (Household Restricted Expenditures)

Shares of Non Durable Goods and Services	1973					1980					1990				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Food and non-alcoholic beverages	67.02	59.93	54.23	48.98	41.25	62.05	53.92	48.01	42.33	34.30	55.24	43.97	39.10	34.09	27.23
Alcoholic beverages and tobacco	5.01	5.48	5.22	4.97	4.47	3.70	4.01	3.86	3.75	3.33	3.22	3.77	3.80	3.39	3.03
Clothing and Footwear	6.95	9.32	10.28	10.93	11.37	7.93	10.58	11.80	12.23	13.06	7.63	11.04	12.40	13.79	15.58
Private Transport Goods	0.29	1.29	2.41	3.38	4.57	0.83	2.99	4.97	6.14	7.10	1.51	4.10	4.91	5.19	4.99
Furnishing and Appliances	2.53	2.83	3.07	3.15	2.77	3.18	3.56	3.49	3.27	2.95	3.79	3.40	3.04	2.78	2.43
Home Energy	7.65	5.11	4.52	3.94	3.28	9.50	6.11	5.04	4.42	3.65	10.18	6.68	5.27	4.43	3.58
Entertainment Goods	0.39	0.89	1.41	2.00	2.74	0.64	1.29	1.84	2.38	2.90	0.92	1.75	2.48	2.95	3.78
Personal Goods	0.44	0.82	1.02	1.25	1.50	0.58	0.87	1.08	1.18	1.30	0.90	1.14	1.35	1.53	1.61
Food and beverages away from home	4.58	6.20	6.85	8.19	9.61	4.23	5.37	6.31	7.68	9.47	5.03	9.08	11.10	12.75	14.95
Holiday Services	0.08	0.15	0.28	0.51	1.08	0.09	0.21	0.23	0.31	0.98	0.19	0.49	0.62	1.10	1.86
Household Services	0.95	1.20	1.46	1.59	3.06	1.37	1.80	2.03	2.49	3.69	1.46	1.36	1.45	1.98	2.90
Entertainment Services	0.60	1.57	2.28	2.90	3.94	0.65	1.72	2.55	3.20	3.80	1.01	2.15	2.72	3.16	3.50
Personal Services	0.50	0.66	0.77	0.89	1.01	0.45	0.65	0.74	0.90	1.04	0.71	0.87	0.87	0.95	1.20
Public Transport Services	1.38	2.01	2.29	2.48	2.86	1.46	1.91	1.87	2.03	2.13	1.15	1.48	1.34	1.71	1.76
Private Transport Services	0.37	1.20	2.08	2.73	3.36	0.72	2.40	3.73	5.09	7.26	1.51	3.99	4.92	5.47	6.03
Communication Services	0.42	0.45	0.58	0.65	0.90	1.26	1.36	1.31	1.30	1.29	2.82	2.20	1.86	1.66	1.37
Miscellaneous services	0.85	0.88	1.27	1.46	2.22	1.36	1.24	1.14	1.28	1.73	2.70	2.52	2.77	3.08	4.19
NON DURABLE GOODS	**90.28**	**85.67**	**82.16**	**78.60**	**71.95**	**88.42**	**83.34**	**80.09**	**75.70**	**68.60**	**83.41**	**75.85**	**72.35**	**68.15**	**62.23**
SERVICES	**9.72**	**14.33**	**17.84**	**21.40**	**28.05**	**11.58**	**16.66**	**19.91**	**24.30**	**31.40**	**16.59**	**24.15**	**24.87**	**28.77**	**33.58**

Table 13. Budget Shares by Quintiles (Equivalent Household Restricted Expenditures)

Shares of Non Durable Goods and Services	1973					1980					1990				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Food and non-alcoholic beverages	67.82	60.72	54.58	49.11	39.42	62.27	54.81	48.69	41.94	33.07	55.60	45.12	38.94	34.10	26.31
Alcoholic beverages and tobacco	5.18	5.52	5.07	4.94	4.44	3.95	3.89	3.87	3.69	3.28	3.51	3.79	3.65	3.40	2.89
Clothing and Footwear	7.13	9.20	10.22	10.88	11.38	7.97	10.52	11.66	12.39	13.03	7.10	10.85	12.28	13.80	16.23
Private Transport Goods	0.42	1.33	2.22	3.26	4.65	1.12	3.08	4.73	6.14	6.98	2.08	4.04	4.97	4.99	4.64
Furnishing and Appliances	2.42	2.83	3.07	3.18	2.86	3.13	3.47	3.53	3.32	3.00	3.61	3.45	3.07	2.81	2.50
Home Energy	7.32	5.09	4.65	4.04	3.42	9.06	6.09	5.21	4.41	3.94	9.86	6.48	5.58	4.56	3.70
Entertainment Goods	0.38	0.83	1.36	1.97	2.86	0.61	1.29	1.73	2.37	3.05	0.90	1.85	2.28	2.98	3.86
Personal Goods	0.44	0.80	1.01	1.24	1.53	0.54	0.84	1.10	1.23	1.30	0.88	1.19	1.37	1.48	1.60
Food and beverages away from home	4.25	5.90	7.14	8.06	10.04	4.19	5.28	6.20	7.85	9.51	5.52	8.99	10.92	12.72	14.70
Holiday Services	0.04	0.10	0.23	0.44	1.27	0.06	0.10	0.22	0.37	1.04	0.13	0.37	0.57	1.10	2.04
Household Services	0.67	1.02	1.36	1.61	3.59	1.07	1.69	1.95	2.53	4.10	1.10	1.26	1.50	1.95	3.29
Entertainment Services	0.63	1.55	2.25	2.95	3.89	0.83	1.71	2.55	3.12	3.72	1.21	2.09	2.71	3.20	3.33
Personal Services	0.40	0.62	0.78	0.96	1.06	0.36	0.55	0.77	0.93	1.16	0.62	0.77	0.97	0.99	1.23
Public Transport Services	1.31	1.85	2.39	2.53	2.93	1.50	1.71	1.89	2.13	2.18	1.09	1.38	1.53	1.69	1.74
Private Transport Services	0.45	1.25	1.88	2.63	3.51	1.00	2.42	3.45	4.89	7.42	1.96	3.67	4.90	5.36	6.01
Communication Services	0.31	0.41	0.56	0.71	0.98	1.08	1.31	1.37	1.37	1.39	2.62	2.20	1.93	1.70	1.46
Miscellaneous goods and services	0.82	0.97	1.23	1.48	2.17	1.26	1.23	1.09	1.33	1.83	2.21	2.50	2.84	3.19	4.46
NON DURABLE GOODS	**91.11**	**86.32**	**82.18**	**78.63**	**70.57**	**88.64**	**84.00**	**80.51**	**75.48**	**67.65**	**83.54**	**76.78**	**72.14**	**68.10**	**61.73**
SERVICES	**8.89**	**13.68**	**17.82**	**21.37**	**29.43**	**11.36**	**16.00**	**19.49**	**24.52**	**32.35**	**16.46**	**23.22**	**27.86**	**31.90**	**38.27**

3.2 CHANGES IN HOUSEHOLD EXPENDITURES INEQUALITY

The analysis by quintiles has shown that changes in equivalent expenditures through time are different in lower and upper quintiles, or in other words, that there are differences over time in household expenditures inequality. Due to the potential role of changes in expenditures inequality as an explanatory factor of consumption patterns in its own right, Table 15 presents some descriptive statistics about the evolution of this magnitude. These include the ratio of the 90th over the 10th percentile, P90/P10, and the mean logarithmic deviation, referred to as the Theil index. Although equivalent household restricted expenditures inequality is always below household restricted expenditures inequality, both distributions follow the same trend: expenditures inequality declines during the first sub-period, and slightly increases during the second one. [5]

[5] *This is essentially the same pattern found in the literature for total expenditures inequality (see Del Río and Ruiz-Castillo, 2001, and Ruiz-Castillo, 1998)*

Table 15. Distribution of Household Restricted Expenditures

	1973-74	1980-81	1990-91
Mean	1,462,871	1,459,047	1,709,673
Percentiles			
1%	134,435	161,400	202,934
5%	284,091	326,175	375,362
10%	420,111	462,231	537,766
25%	748,324	789,278	928,816
50%	1,232,957	1,275,073	1,523,517
75%	1,868,970	1,904,277	2,294,028
90%	2,702,274	2,701,914	3,230,298
95%	3,376,216	3,297,256	3,914,462
99%	5,297,153	4,931,465	5,984,268
Inequality Measure, P90/P10	6.43	5.85	6.01
Theil Index	0.255	0.225	0.227
Distribution of Equivalent Household Restricted Expenditures			
	1973-74	**1980-81**	**1990-91**
Mean	757,883	776,665	959,701
Percentiles			
1%	118,556	133,632	175,357
5%	214,471	234,180	289,852
10%	282,705	305,512	374,982
25%	430,529	456,578	559,889
50%	648,386	673,380	834,236
75%	942,811	970,303	1,201,797
90%	1,347,315	1,354,180	1,674,527
95%	1,682,554	1,658,234	2,027,413
99%	2,561,365	2,429,035	3,064,723
Inequality Measure, P90/P10	4.77	4.43	4.47
Theil Index	0.190	0.172	0.171

3.3 HOUSEHOLD CHARACTERISTICS

Unfortunately, the demographic and economic information of every household member different from the household head in the 1973-74 EPF is rather poor. Therefore, the evolution over time of these household characteristics shown in Table 16 must be restricted to the 1980-81 and 1990-81 EPFs. The main changes observed are the following.

1. The percentage of singles and couples headed by an older person goes from 12.4% to 15.9%. This is the consequence of an increase in the life expectancy, and in old-age pensions that permit older people to live on their own rather than with their descendants.

2. The above trend, together with a strong decline in fertility during this period explains the increase in the percentage of households without children, especially for children less than 15 years old (see Table 17). The average number of children of this age goes from 1.2 to 0.6 in 10 years, while the average household size declines from 3.7 to 3.41 persons.

3. The percentage of (presumably young) couples whose youngest child is less than 6 years old decreases by 7 percentage points, while the proportion of couples with older children goes up by more than 5 percentage points. Together with the fact that the percentage of singles and couples without children whose household head is less than 65 years remains constant at a relatively low percentage (11%), these trends reflect the Southern European phenomenon of younger adults remaining for very long in the parental home.

4. The proportion of lone parents goes up from 3.9% to 5.2%, while the proportion of the residual category of "other households" with and without children goes down by 3 percentage points.

5. The proportion of households of all types where the adults of working age hold no job at all increases from 8.9% to 10.7%. This is a reflection of the high unemployment rates in Spain. At the same time, two earners households increase by 3.5 percentage points. Not surprisingly, most of this increase takes place among households with older children. On the other hand, the proportion of one-earner households in couples with children or whose youngest child is less than 6 years old decreases from 20% to 12%.

Table16. Frequency Distribution of the Different Types of Households in Spain

Cells: % of households				1980-81	1990-91	% Change 1980-1990
	Types					
1	Single	Age < 65	No job	1.28	1.67	30.5
2			One job	1.82	1.95	7.1
3	Single	Age > 64		4.67	6.37	36.4
4	Couple	Age < 65	No job	1.84	2.34	27.2
5			One job	5	3.54	-29.2
6			Two jobs	1.51	1.61	6.6
7	Couple	Age > 64		7.74	9.49	22.6
8	Other			7.68	6.19	-19.4
9	Single	With Children	No job	1.34	1.89	41.0
10			One job	2.54	3.28	29.1
11	Couple	Youngest child < 6	No job	1.43	1	-30.1
12			One job	15.27	8.82	-42.2
13			Two + jobs	3.81	3.65	-4.2
14		Youngest child > 5	No job	2.98	3.82	28.2
15			One job	17.64	18.92	7.3
16			Two + jobs	11.31	14.89	31.7
17	Other	With Children		12.15	10.57	-13.0
All				100.0	100.0	
		Number of Observations		23,971	21,155	

Table 17. Average Household Size and Number of Children in Spain (1973 1980 1990)

	1973	1980	1990
Avg. HH size	3.73	3.70	3.41
Avg. # adults	2.75	2.50	2.80
Avg. # children	0.98	1.20	0.61
# children (%)			
0	50.94	45.15	62.51
1	18.66	17.96	18.97
2	16.98	19.95	13.85
3	8.19	10.19	3.84
4 or more	5.23	6.75	0.83

In brief, it can be concluded that household demographic characteristics and the relation with economic activity of individuals of working age experiment important changes during this period. The impact of these changes on consumption patterns remains to be seen in the next section.

4 EMPIRICAL RESULTS

4.1 BUDGET ELASTICITIES

As pointed out in the previous section, the aim of this project at the country level is to explain the change in the average demand at current prices, i. e. (w_k^2 -w_k), where t = 1, 2 corresponds to 1980-81 and 1990-91, respectively, and k = 1,…, 17 are the 17 non-durable goods and services that have been analysed so far. Thus, the empirical analysis focuses on a system of Engel curves where the dependent variable in each equation is the household budget share in current prices, i. e. $w_{k,h}^t$.

As reviewed in Blow et al. (2003), the empirical specification is the following Almost Ideal Demand System reduced form for each Engel curve:

$$w_{k,h}^t = \alpha_k^t + \gamma_k^t z_{k,h}^t + \beta_k^t \ln x_{k,h}^t + v_k^t, \qquad (1)$$

where x_h^t is household h's total expenditures in year t; z_h are household characteristics; and α_k, γ_k^t and β_k are parameters to be estimated. The specific regressors included in z_h^t are: the natural log of household size; the share of household members under age six, 6-17, 18-30, 31-64, and 65 or older; the age and age squared of the household's reference person; the number of employed persons in the household; a binary variable equal to one if all adults in the household are employed; and a binary variable equal to one if all households are employed and there is a child under age of six in the household. To compensate for the possibility of measurement error in total expenditures, total household income has been used as an instrument for total household expenditures. Descriptive statistics about the regressors in the Spanish case are in Table 18. [6]

Table 18. The Independent Variables

[6] *Estimation results for the 17 goods and services are in Appendix C.*

	1980	1990	% Change
Ln avg. total expenditures*	14.207	14.384	1.24
Theil Index	0.225	0.227	1.26
Ln family size	1.184	1.106	-6.62
Share of household ages 6-17	0.169	0.146	-13.74
Share of household ages 18-30	0.155	0.169	9.12
Share of household ages 31-64	0.405	0.407	0.52
Share of household age 65+	0.178	0.219	22.77
Age of reference person	49.942	52.521	5.16
Age of reference person squared	2,722.42	3, 001.03	10.23
Number employed in household	1.079	1.054	-2.27
All adults in household employed	0.193	0.135	-29.84
All adults employed + child under 6	0.048	0.044	-7.77

Weighted Averages
* Expenditures in 1990 pesetas

The budget elasticity, denoted by εk^t, is defined as follows:

$$\varepsilon_k^t = 1 + (\beta_k^t / w_k^t),\ t = 1,2,\ k = 1,\ldots, 17.$$

Substituting the parameter estimate βk^{t*} in this equation yields the estimated budget elasticity $\varepsilon k\ t^*$. Table 19 reports budget elasticities with respect to total expenditures in 1980-81 and 1990-91 evaluated at the budget shares' mean values.

All of the service categories, except Public transport services in 1990-91, have elasticities above one. In particular, Household, and Holiday services have elasticities above 2.0. Services as a whole shows an elasticity of 1.70 in 1980-81 and 1.61 in 1990-91. Several goods, however, have elasticities below one: Food and non-alcoholic drinks and Alcoholic drinks and tobacco, with elasticities around 0.50, and Home energy plus Furnishings and appliances, with elasticities close to 0.80. Entertainment goods in both years, together with Private transport goods in 1980-81 behave clearly as luxuries. The remaining goods have elasticities between 1.2 and 1.3. All goods taken as a whole behave as necessities with elasticities close to 0.8.

Table 19. Budget Elasticities

	1980-81	1990-91
Food and non-alcoholic beverages	0.583	0.502
Alcoholic beverages and tobacco	0.562	0.400
Clothing and Footwear	1.248	1.282
Private Transport Goods	1.710	1.244
Furnishing and Appliances	0.878	0.595
Home Energy	0.835	0.838
Entertainment Goods	2.165	1.905
Personal Goods	1.291	1.173
Food and beverages away from home	1.422	1.293
Holiday Services	3.255	3.242
Household Services	2.627	2.984
Entertainment Services	1.517	1.407
Personal Services	1.925	1.714
Public Transport Services	1.124	0.977
Private Transport Services	1.752	1.742
Communication Services	1.962	1.465
Miscellaneous services	1.620	1.785
NON DURABLE GOODS	0.816	0.763
SERVICES	1.696	1.612

4.2 THE EXPLANATION OF OBSERVED CHANGES

For each k and t, denote by αk^{t*}, γk^{t*} and βk^{t*} the corresponding parameter estimates, and by zk^t and xk^t the vector of mean household characteristics and mean reduced household expenditures, respectively. Then the observed difference between average budget shares for commodity k in periods 2 and 1 can be expressed as:

$$w_k^2 - w_k^1 = (\alpha_k^{2*} + \gamma_k^{2*} z_k^2 + \beta_k^{2*} \ln x_k^2) - w_k^1. \quad (2)$$

The predicted budget share for commodity k using the parameters of year 2 and the mean characteristics of year 1 is $(\alpha_k^{2*} + \gamma_k^{2*} z_k^1 + \tilde{\beta}_k^{2*} \ln x_k^1)$

Adding and subtracting this magnitude in equation 2, we have:

$$w_k^2 - w_k^1 = \gamma_k^{2*}(z_k^2 - z_k^1) + \beta_k^{2*} (\ln x_k^2 - \ln x_k^1) + R_k, \quad (3)$$

where

$$R_k = \alpha_k^{2*} + \gamma_k^{2*} z_k^1 + \beta_k^{2*} \ln x_k^1 - w_k^1. \quad (4)$$

Let $\tilde{w}k^t$ be period t budget share for commodity k at reference prices $p\tilde{}$. Adding up and subtracting the expression $\tilde{w}k^1 + (w_k^{2\wedge} - \tilde{w}k^2)$ in equation (4), we have:

$$R_k = (w_k^2 - \tilde{w}k^2) + (\tilde{w}k^1 - w_k^1) + (\alpha_k^{2*} + \gamma_k^{2*} z_k^1 + \beta_k^{2*} \ln x_k^1 - \tilde{w}k^1) + (\tilde{w}k^2 - w_k^2) = B_k + R'_k,$$

where

$$B_k = (w_k^2 - \tilde{w}k^2) + (\tilde{w}k^1 - w_k^1) \quad (5)$$

and

$$R'_k = (\alpha_k^{2*} + \gamma_k^{2*} z_k^1 + \beta_k^2 \ln x_k^1 - \tilde{w}k^1) + (\tilde{w}k^2 - w_k^2). \quad (6)$$

Equation 5 is the Baumol effect, which captures the impact of price changes holding quantities demanded constant, while equation 6 is a new residual capturing the remaining price substitution effects, preference changes and other factors. Therefore, we have:

$$w_k^2 - w_k^1 = \gamma_k^{2*}(z_k^2 - z_k^1) + \beta_k^{2*} (\ln x_k^2 - \ln x_k^1) + B_k + R'_k. \quad (7)$$

As explained in Blow *et al.* (2003), starting from the Engel curve system specified in equation 1, the observed change in the average budget shares between two time periods can

be decomposed into 6 terms. The first term in equation 7, $\gamma_k^{2*}(z_k^2 - z_k^1)$, capturing changes in household characteristics, give rise to two terms induced by (1) changes in demographic and (2) employment variables. The second term in equation 7, $\beta_k^{2*}(\ln x_k^2 - \ln x_k^1)$, capturing changes in the mean of the log of household expenditures, can be expressed as the sum of (3) changes in the log of mean expenditures, that is to say, a change in levels, and (4) changes in household expenditures inequality measured by the mean logarithmic deviation. Finally, the unexplained residual in equation 4 can be conveniently decomposed into two terms: (5) the Baumol effect, or the third term in equation 7, and (6) the new residual, or the last term in equation 7. The explanation of the observed changes in the Spanish case in terms of the 6 factors already explained is in Table 20.

Table 20. Summary of the Decomposition of %-Points Budget Shares Changes over the Period 1908-1990

	Total Change	Demographics (1)	Employment (2)	Budget Level (3)	Budget Distribution (4)	Baumol Effect (5)	Residual (6)
Food and non-alcoholic beverages	-8.35	-0.73	0.09	-3.48	0.06	-0.08	-4.20
Alcoholic beverages and tobacco	-0.29	-0.15	-0.03	-0.36	0.01	-0.02	0.27
Clothing and Footwear	1.03	-0.08	0.00	0.61	-0.01	0.50	0.03
Private Transport Goods	-0.29	-0.13	0.00	0.18	0.00	-1.80	1.46
Furnishing and Appliances	-0.22	-0.03	0.00	-0.22	0.00	-0.22	0.23
Home Energy	0.25	0.14	0.03	-0.17	0.00	-0.20	0.45
Entertainment Goods	0.59	0.00	-0.01	0.39	-0.01	0.06	0.16
Personal Goods	0.30	0.01	0.00	0.04	0.00	-0.15	0.40
Food and beverages away from home	4.06	0.24	-0.09	0.55	-0.01	0.85	2.52
Holiday Services	0.51	0.11	-0.02	0.35	-0.01	0.11	-0.04
Household Services	-0.44	0.13	-0.01	0.65	-0.01	0.13	-1.33
Entertainment Services	0.13	0.05	0.01	0.18	0.00	-0.01	-0.10
Personal Services	0.16	0.07	0.01	0.12	0.00	0.10	-0.12
Public Transport Services	-0.39	0.03	-0.01	-0.01	0.00	0.11	-0.52
Private Transport Services	0.55	-0.03	0.00	0.58	-0.01	0.77	-0.77
Communication Services	0.66	0.13	0.01	0.16	0.00	-0.24	0.59
Miscellaneous services	1.73	0.24	0.01	0.43	-0.01	0.08	0.97
NON DURABLE GOODS	-6.97	-0.97	0.08	-3.02	0.05	-1.91	-1.19
SERVICES	6.97	0.97	-0.08	3.02	-0.05	1.91	1.19
SERVICES (%)	100.00	13.92	-1.09	43.31	-0.70	27.47	17.09

The first column presents the total change in budget shares to be explained (taken fro m Table 11); for example, the budget share of Food and non-alcoholic beverages and Alcoholic beverages and tobacco have decreased during the 1980s in 8.35 and 0.29 percentage points, respectively, while services as a whole have increased in 6.97 percentage points. The role of the different factors is presented in the next 6 columns.

(1) Except for Housing energy (+ 0.14), changes in demographic variables affect negatively the demand for goods, specially Food and non-alcoholic beverages (- 0.73 percentage points), Alcoholic beverages and tobacco (-0.15), and Private transport goods (-0.13). Overall, demographic factors account for 0.97 percentage points, or almost 14% of the total change in services as a whole. The more affected services are Food and non-

alcoholic beverages (+ 0.24) and Miscellaneous services (+ 0.24), followed by Holiday (+ 0.11) and Household services (+ 0.13), as well as Communication services (+ 0.13).

(2) The role of employment factors is very small indeed: changes in employment patterns give rise to a decrease of 0.08 points in the services' budget share. As pointed out in Kalwij and Salverda (2003), most employment effects are likely to run through the expenditures and these variables only measure the fixed cost of employment.

(3) The increase in household restricted expenditures gives rise to sizable demand changes the increase in mean expenditures in accordance with the estimated elasticities reported in Table 19. Among goods, the demand for necessities goes down in Food and non-alcoholic drinks (- 3.48), Alcoholic drinks and tobacco (- 0.36), Furnishings and appliances (- 0.22), and Home energy (- 0.17). This is partially offset by the increase in the demand for goods that behave as luxuries: Clothing and footwear (+ 0.61), Entertainment (+ 0.39) and Personal Goods (+ 0.18). Except for Public transport services, there is a general increase in the demand for services: Food and drinks away (+ 0.55), Holiday and Household services (+ 1.0), Communications and Miscellaneous (+ 0.59) and Entertainment and Personal services (+ 0.30). Overall, the increase accounts for 3.02 percentage points or 43% of the total increase in the services budget share.

(4) The slight increase in restricted expenditures inequality during this period has a negligible effect on the pattern of demand. In particular, this change in expenditures inequality accounts for a decrease of 0.05 percentage points in the services' budget share, or 0.7% of the total change in this variable.

(5) As explained in Appendix B, reference prices p% for the computation of the Baumol effect in the Spanish case are those of Winter 1991. As in the remaining countries in the DEMPATEM project, Table 21 shows that in Spain prices of services have generally increased during the 1980s more rapidly than prices of goods. Therefore, when k refers to services as a whole, the first term in equation 5, $(w_k^2 - \tilde{w}_k^{2^*})$ s expected to be negative but small, since it captures the impact of price changes from Spring, Summer and Autumn of 1990 to Winter 1991, holding constant quantities demanded in 1990. Instead, the second term in that equation, $(\tilde{w}_k^1 - w_k^1)$ s expected to be positive and large, since it captures price changes from 1980-81 to Winter 1991, holding constant quantities demanded in 1980-81. Consequently, as anticipated in Blow *et al.* (2003), the Baumol effect for services is positive, accounting for 1.91 percentage points or 27.5% of the total observed increases in the services share.

Most in the decrease in the demand for goods attributable to this effect is due to the drastic change in the Private transport good's budget share (- 1.80). There is also a decrease in the demand for Furnishings and appliances (- 0.22), Home energy (- 0.20) and Personal goods (- 0.15), partially offset by an important increase in the price of Clothing and footwear which leads to an increase of 0.50 percentage points in this good's budget share. At the same time that a relative decrease in the price of Private transport goods causes a large Baumol effect for that commodity, a relative high increase in the price of Private transport services gives rise to a large positive Baumol effect of 0.77 percentage points. This, together with an increase of 0.85 points in Food and drinks away, accounts for most of the Baumol effect among services.

In brief, for the services as a whole there is only 1.19 points or 17.1% of the observed change that cannot be explained by the previous 5 factors. However, the explanatory power at the level of specific commodities leaves much to be desired. On one hand, the unexplained residual is less or equal to the 27% of the change to be explained in only 3 cases: Clothing and footwear, Entertainment goods, and Holiday services. On the other hand, for 7 commodities the unexplained residual amounts in absolute value to more than 104% of the change to be explained. For the remaining 7 commodities this percentage ranges from 50% in Food and non-alcoholic drinks to 89% in Communication services.

Table 21. Price Indexes for the Restricted Categories

Cells: Price Index	1980-81	1990-91
Food and non-alcoholic beverages	100	237.7
Alcoholic beverages and tobacco	100	244.6
Clothing and Footwear	100	248.7
Private Transport Goods	100	235.8
Furnishing and Appliances	100	221.5
Home Energy	100	229.8
Entertainment Goods	100	244.7
Personal Goods	100	200.2
Food and beverages away from home	100	273.8
Holiday Services	100	319.4
Household Services	100	255.3
Entertainment Services	100	237.5
Personal Services	100	269.9
Public Transport Services	100	253.1
Private Transport Services	100	291.3
Communication Services	100	190.2
Miscellaneous services	100	220.2
ALL	100	241.6
NON DURABLE GOODS	100	232.0
SERVICES	100	251.2

4.3 COUNTERFACTUALS: SPANISH *VERSUS* U.S. PATTERNS

Table 22 compares the mean values of the explanatory factors in 1980 and 1990 between Spain and the U.S.

Table 22. Comparison of Independent Variables in Spain and the U.S.

	1980			1990		
	US	SPAIN	% Difference*	US	SPAIN	% Difference*
Ln family size	0.835	1.184	-29.49	0.760	1.106	-31.29
Share of household ages 6-17	0.117	0.169	-30.78	0.098	0.146	-32.95
Share of household ages 18-30	0.256	0.155	65.38	0.220	0.169	30.08
Share of household ages 31-64	0.379	0.405	-6.34	0.416	0.407	2.15
Share of household age 65+	0.178	0.178	-0.20	0.198	0.219	-9.75
Age of reference person	46.314	49.942	-7.26	47.319	52.521	-9.90
Age of reference person squared	2,465.056	2,722.418	-9.45	2,563.874	3,001.029	-14.57
Number employed in household	1.425	1.079	32.08	1.369	1.054	29.84
All adults in household employed	0.549	0.193	184.77	0.579	0.135	328.41
All adults employed + child under 6	0.095	0.048	100.01	0.102	0.044	132.37
Ln avg. total exp.	14.337	14.207	0.92	14.299	14.384	-0.59
Theil Index	0.190	0.225	-15.44	0.195	0.227	-14.39

* US minus Spain

Table 23. U.S.-Spain Budget Share Differentials

1980	Total Difference in	Composition Effects		Budget Effects		
Cells: % -points	Current Prices	Demographics	Employment	Level	Distribution	Residual
Food and non-alcoholic beverages	-21.6	-6.0	-0.8	-2.6	-0.7	-11.4
Alcoholic beverages and tobacco	0.8	-0.4	0.1	-0.2	-0.1	1.4
Clothing and Footwear	-4.8	0.6	-0.1	0.4	0.1	-5.7
Private Transport Goods	6.5	0.8	0.1	0.4	0.1	5.1
Furnishing and Appliances	-2.3	-0.1	-0.1	-0.1	0.0	-2.1
Home Energy	3.0	0.4	-0.1	-0.1	0.0	2.9
Entertainment Goods	0.8	0.6	0.0	0.3	0.1	-0.1
Personal Goods	3.5	0.1	0.0	0.0	0.0	3.3
Food and beverages away from home	-1.0	1.3	0.7	0.4	0.1	-3.4
Holiday Services	3.0	0.2	0.0	0.1	0.0	2.7
Household Services	0.3	0.8	0.1	0.5	0.1	-1.3
Entertainment Services	-0.5	0.2	0.2	0.2	0.0	-1.2
Personal Services	0.7	0.2	0.0	0.1	0.0	0.4
Public Transport Services	-0.2	0.1	0.0	0.0	0.0	-0.4
Private Transport Services	2.6	0.7	0.1	0.4	0.1	1.4
Communication Services	2.5	0.3	-0.1	0.2	0.0	2.1
Miscellaneous services	6.6	0.2	0.0	0.1	0.0	6.3
NON DURABLE GOODS	-14.1	-4.1	-1.0	-1.9	-0.5	-6.6
SERVICES	14.1	4.1	1.0	1.9	0.5	6.6
(%)		28.9	7.3	13.5	3.6	46.8
1990	**Total Difference in**	**Composition Effects**		**Budget Effects**		
Cells: % -points	**Current Prices**	**Demographics**	**Employment**	**Level**	**Distribution**	**Residual**
Food and non-alcoholic beverages	-15.8	-5.4	-0.7	1.7	-0.6	-10.7
Alcoholic beverages and tobacco	0.4	-0.5	0.2	0.2	-0.1	0.5
Clothing and Footwear	-5.7	1.0	0.0	-0.3	0.1	-6.5
Private Transport Goods	2.4	0.2	0.0	-0.1	0.0	2.2
Furnishing and Appliances	-1.9	-0.1	0.0	0.1	0.0	-1.8
Home Energy	2.7	0.3	-0.2	0.1	0.0	2.6
Entertainment Goods	0.3	0.6	0.1	-0.2	0.1	-0.2
Personal Goods	3.6	0.0	0.0	0.0	0.0	3.6
Food and beverages away from home	-4.7	0.9	0.9	-0.3	0.1	-6.3
Holiday Services	2.8	0.5	0.1	-0.2	0.1	2.3
Household Services	1.2	0.9	0.1	-0.3	0.1	0.3
Entertainment Services	0.7	0.0	-0.1	-0.1	0.0	0.8
Personal Services	0.8	0.1	-0.1	-0.1	0.0	0.7
Public Transport Services	0.1	-0.1	0.0	0.0	0.0	0.2
Private Transport Services	3.7	0.9	0.0	-0.3	0.1	3.0
Communication Services	3.6	0.3	-0.1	-0.1	0.0	3.5
Miscellaneous services	5.7	0.3	-0.2	-0.2	0.1	5.6
NON DURABLE GOODS	-13.9	-4.0	-0.7	1.5	-0.6	-10.2
SERVICES	13.9	4.0	0.7	-1.5	0.6	10.2
(%)		28.4	4.8	-10.5	4.0	73.2

Table 23 compares the observed budget shares in 1980-81 and 1990-91 in Spain with what it would have been if Spanish households had U.S. characteristics and total expenditures in those dates. Such predicted differences are analysed by means of the decomposition analysis presented in Blow *et al.* (2003) into 5 terms. The first two are attributable to differences in demographic and employment variables, respectively. Income effects give rise to two terms, one depending on differences in mean restricted expenditures, and another one depending on differences in restricted expenditures inequality. The fifth term is a residual reflecting the unexplained part.

As can be seen in the first column of Table 23, services budget shares in Spain would increase by 14.1 percentage points in 1980-81 and 13.9 in 1990-91 if Spanish households were to have U.S. characteristics. Demographic and employment variables together account for 5.1 and 4.7 percentage points in 1980 and 1990, or 36.2% and 33.2% of the observed difference in services' shares between the two countries in those dates. Given that the regression coefficient for log expenditures in the services Engel curve are similar in both years and that restricted expenditures inequality is slightly higher in Spain than in the U.S., the distributional effect is of a similar order of magnitude in 1980 and 1990. The main difference between 1980 and 1990 is due to the fact that mean restricted expenditures in the U.S. is smaller in 1990 than in 1980. Thus, the budget level effect becomes negative in 1990.

5 ROBUSTNESS OF THE RESULTS

5.1 ZERO EXPENDITURES AND GOODNESS OF FIT

It is worth noticing that, as can be seen in Appendix C, all regression coefficients needed in the estimation of budget elasticities are highly significant. The main reason, of course, is the large sample size, equal to 23,707 and 21,155 household observations in 1980-81 and 1990-91, respectively. However, the previous exercise has some drawbacks. As can be seen in Table 24, several goods and services have both a very large percentage of zero expenditures in 1990-91 and/or a poor goodness of fit.

This situation calls for some further experimentation. Essentially, some goods and services should be aggregated into wider categories in order to reduce the zero expenditures problem and, perhaps, improving the goodness of fit. Moreover, there are other potential explanatory variables for which there is information in the Spanish case. Thus, there is room to test how robust are the results obtained up to this point.

The first two columns in Table 25 present the proportion of zero expenditures and the statistic R^2 after some goods and services are aggregated into larger categories. Two goods are aggregated if it makes economic sense and if their estimated elasticities (see Table 19) are close. The 5 pairs considered (with elasticities between brackets) are the following: Furnishing and Appliances (0.595) and Home Energy (0.838); Entertainment Goods (1.905) and Personal Goods (1.173); Holiday Services (3.242) and Household Services (2.984); Entertainment Services (1.407) and Personal Services (1.714); Communication Services (1.465) and Miscellaneous Services (1.785). This leads to a new Engel curve system consisting of 6 goods and 6 services.

The third column in Table 25 presents the R^2 for the aggregated system of Engel curves once all available explanatory variables are included. The new regressors are the following:[7]

- A dummy variable for female head of household
- Education dummies
- Socio-economic dummies
- A dummy for homeowners
- Dummies controlling for the quarter when the interview took place
- Dummies controlling for the size of the town where the household resides

[7] *Complete regression results for this new system of Engel curves with additional regressors can be found in Appendix C*

- Dummies for the different regions

Table 24. Zero Expenditures and Goodness of Fit, 1990-91

	Zeros (%)	R^2
Food and non-alcoholic beverages	0.4	0.264
Alcoholic beverages and tobacco	16.85	0.045
Clothing and Footwear	10.43	0.020
Private Transport Goods	40.11	0.137
Furnishing and Appliances	16.86	0.022
Home Energy	0.52	0.128
Entertainment Goods	35.01	0.049
Personal Goods	46.33	0.010
Food and beverages away from home	15.93	0.142
Holiday Services	83.48	0.022
Household Services	90.1	0.080
Entertainment Services	36.92	0.009
Personal Services	58.48	0.009
Public Transport Services	51.16	0.100
Private Transport Services	28.88	0.051
Communication Services	22.34	0.051
Miscellaneous services	27.99	0.016
NON DURABLE GOODS	0.01	0.184
SERVICES	1.71	0.184

Table 25. Zero Expenditures and Goodness of Fit after Aggregation and Inclusion of other Explanatory Variables, 1990-91

	% zeros	R^2	R^2 With more regressors	Elasticity
Food and non-alcoholic beverages	0.40	0.264	0.304	0.505
Alcoholic beverages and tobacco	16.85	0.045	0.074	0.421
Clothing and Footwear	10.43	0.020	0.035	1.351
Private Transport Goods	40.12	0.137	0.147	1.254
Furnishing and Appls. + Home energy	0.18	0.137	0.163	0.835
Entertainment + Personal Goods	23.33	0.050	0.077	1.407
Food and beverages away from home	15.93	0.143	0.160	1.296
Holiday + Household Services	52.73	0.080	0.116	2.915
Entertainment + Personal Services	31.68	0.041	0.064	1.491
Public Transport Services	51.16	0.009	0.037	0.656
Private Transport Services	28.88	0.100	0.118	1.744
Communication + Miscell. Services	9.34	0.031	0.044	1.652
Services	1.71	0.184	0.222	1.580

After aggregation and the introduction of new explanatory variables, the problem of zero expenditures is diminished and the goodness of fit of the Engel curves uniformly improves. Of the final 12 commodities, 6 have an R^2 above 0.10, 3 between 0.06 and 0.08, and only 3

below 0.04. For Services as a whole, the R^2 increases from 0.184 to 0.222, a 20% improvement.

Table 26 presents the decomposition of the change in the budget shares for the period 1980-1990 for the new aggregated Engel curve system. Together with the information provided in Table 20, column 5 in Table 26 summarizes the explanatory effect attributed to the new regressors.

Table 26. Summary of the Decomposition of %-Points Budget Share Changes over the Period 1980-1990

	Overall Change	Demographics (1)	Employment (2)	Budget Level (3)	Budget Distribution (4)	Other Variables (5)	Baumol (6)	Residual (7)
Food and non-alcoholic beverages	-8.35	-0.76	0.08	-3.46	0.06	-0.04	-0.08	-4.15
Alcoholic beverages and tobacco	-0.29	-0.13	-0.03	-0.35	0.01	-0.04	-0.02	0.28
Clothing and Footwear	1.03	-0.07	-0.01	0.76	-0.01	-0.01	0.50	-0.12
Private Transport Goods	-0.29	-0.10	0.00	0.19	0.00	-0.06	-1.80	1.48
Furnishing and Appls. + Home energy	0.03	0.10	0.03	-0.26	0.00	-0.01	-0.41	0.59
Entertainment + Personal Goods	0.90	-0.04	-0.01	0.27	0.00	0.17	0.06	0.46
Food and beverages away from home	4.06	0.24	-0.10	0.56	-0.01	-0.05	0.85	2.56
Holiday + Household Services	0.07	0.22	-0.01	0.93	-0.01	0.07	0.24	-1.36
Entertainment + Personal Services	0.29	0.11	0.01	0.30	0.00	0.06	0.09	-0.27
Public Transport Services	-0.39	0.02	-0.01	-0.09	0.00	0.04	0.11	-0.46
Private Transport Services	0.55	0.01	0.01	0.58	-0.01	-0.08	0.77	-0.74
Communication + Miscellaneous	2.38	0.41	0.03	0.58	-0.01	-0.06	-0.15	1.58
SERVICES	6.97	1.01	-0.07	2.86	-0.05	-0.01	1.91	1.30
%		14.51	-0.96	41.07	-0.66	-0.15	27.47	18.72

The reduction of the commodity space through aggregation and the introduction of new regressors do not alter in any major way our ability to explain changes in demand patterns during the 1980s. Consider services as a whole. The explanatory role of demographic and employment variables, as well as the role of level budget and distribution changes, remains essentially constant (compare the last two rows of Table 26 and Table 20). On the other hand, the new explanatory variables account for a small decrease in the services' share that, as we know, has increased by 6.97 percentage points during this period. Finally, the details reported in page 19 about the impact of different variables on specific commodities need not be essentially changed at this point.

5.2 CONSTANT VERSUS CURRENT PRICES

There is an alternative way of decomposing the observed differences in average budget shares in this period. Consider the decomposition of that change for commodity k into the Baumol effect and a residual:

$$w_k^2 - w_k^1 = (w_k^2 - \hat{w}_k^2) + (\hat{w}_k^1 - w_k^1) + (\hat{w}_k^2 - \hat{w}_k^1) = B_k + (\hat{w}_k^2 - \hat{w}_k^1)$$

where Bk is the Baumol effect (see equation 5), that is:

$$B_k = (w_k^2 - \tilde{w}_k^2) + (\tilde{w}_k^1 - w_k^1).$$

Let

$$\tilde{w}_k^1 = \xi_k^1 + \lambda_k^1 z_{k,h}^1 + \theta_k^1 \ln \tilde{x}_{k,h}^1 + \varphi_k^1,$$

where $\tilde{x}_{k,h}^t$ is household expenditure in year 1 at reference prices $\tilde{p}$. Let ξ_k^{1*}, λ_k^{1*}, and θ_k^{1*} be the corresponding parameter estimates. Let $\xi_k^{1*} + \lambda_k^{1*} z_k^2 + \theta_k^{1*} \ln \tilde{x}_k^2$ be the predicted budget share using year 1 parameter estimates and year 2 mean characteristics. Then we have:

$$(\tilde{w}_k^2 - \tilde{w}_k^1) = \lambda_k^{1*} (z_k^2 - z_k^1) + \theta_k^{1*} (\ln \tilde{x}_k^2 - \ln \tilde{x}_k^1) + R_k,$$

where

$$R_k = \tilde{w}_k^2 - \xi_k^{1*} - \lambda_k^{1*} z_k^2 - \theta_k^{1*} \ln \tilde{x}_k^2$$

is a residual. Therefore, we have:

$$w_k^2 - w_k^1 = \lambda_k^{1*} (z_k^2 - z_k^1) + \theta_k^{1*} (\ln \tilde{x}_k^2 - \ln \tilde{x}_k^1) + B_k + R_k. \quad (8)$$

The results of this alternative decomposition when reference prices are taken to be those of 1991 Winter are in Table 27. As we saw in the discussion of equation 7, the first term in equation 8 can be decomposed into the explanatory factor attributable to demographic and employment variables, while the second term can decomposed into the explanatory factor due to the change in mean household expenditures at reference prices and in the household expenditures inequality. These 4 factors, together with the Baumol effect and the residual, give rise to the corresponding columns (1) to (6) in Table 27.

Table 27. Summary of the Decomposition of %-Points Budget Share Changes over the period 1980-1990

	Total Change	Demographics (1)	Employment (2)	Budget Level (3)	Budget Distribution (4)	Baumol Effect (5)	Residual (6)
Food and non-alcoholic beverages	-8.35	-0.67	0.12	-3.49	-0.002	-0.08	-4.22
Alcoholic beverages and tobacco	-0.29	-0.05	0.00	-0.28	0.000	-0.02	0.07
Clothing and Footwear	1.03	-0.07	0.03	0.46	0.000	0.50	0.12
Private Transport Goods	-0.29	-0.06	0.00	0.32	0.000	-1.80	1.25
Furnishing and Appliances	-0.22	-0.03	0.01	-0.07	0.000	-0.22	0.08
Home Energy	0.25	0.13	0.01	-0.19	0.000	-0.20	0.50
Entertainment Goods	0.59	0.05	0.00	0.37	0.000	0.06	0.12
Personal Goods	0.30	0.02	0.00	0.04	0.000	-0.15	0.40
Food and beverages away from home	4.06	0.17	-0.09	0.57	0.000	0.85	2.57
Holiday Services	0.51	0.07	-0.01	0.19	0.000	0.11	0.14
Household Services	-0.44	0.16	-0.02	0.72	0.000	0.13	-1.42
Entertainment Services	0.13	0.10	-0.02	0.21	0.000	-0.01	-0.15
Personal Services	0.16	0.07	0.00	0.14	0.000	0.10	-0.14
Public Transport Services	-0.39	0.06	-0.01	0.04	0.000	0.11	-0.60
Private Transport Services	0.55	-0.07	-0.01	0.63	0.000	0.77	-0.77
Communication Services	0.66	0.07	0.01	0.17	0.000	-0.24	0.65
Miscellaneous services	1.73	0.06	0.00	0.16	0.000	0.08	1.42
NON DURABLE GOODS	-6.97	-0.68	0.15	-2.83	-0.002	-1.91	-1.69
SERVICES	6.97	0.68	-0.15	2.83	0.002	1.91	1.69
SERVICES (%)		9.79	-2.18	40.66	0.03	27.47	24.24

By way of example, consider the case of services as a whole, and compare the last two rows of Table 27 and Table 20. The main difference is that the unexplained residual increases from 1.29 to 1.69 points, representing 25 17.1% and 24.2%, respectively, of the 6.97 change in the services' budget share during the 1980s. This is the consequence of a slight decrease in the explanatory power of changes in demographic variables, the mean budget level and the household expenditures inequality. Therefore, it may be safely concluded that Section IV results are robust to the alternative of using the estimated parameters of the 1980-81 Engel curve system at Winter 1991 prices (as in equation 8), instead of the estimated parameters of the 1990-91 Engel curve system at those prices (as in equation 7).

Thus, the results reported in table 20 using the decomposition of equation 7 for the original list of 8 non durable goods and 9 services in terms of the common set of variables used by all countries in the project, provide an acceptable explanation of changes in demand patterns in Spain during the 1980s. Consequently, Tables 23 and 24 provide our best explanation of U.S. and Spain budget share differentials in 1980 and 1990, respectively.

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APPENDIX A: THE DETAILED COMMODITY CLASSICATION

This section describes the commodities of the 1990-91 EPF included in each of the 20 categories distinguished in the project. Information on the codes for location of the variables in the original data set is also included for our own reference (i refers to a commodities file, while r refers to a more aggregated *rubrica* file).

GOODS

1. Food and non-alcoholic beverages: v1a + v1b

v1a. Food at home. It includes cereal, bread, beef, lamb, pork, poultry, other meat, fresh and frozen fish, prepared fish, eggs, milk, dairy, oils and fats, fresh fruit, canned goods, fresh vegetables, prepared vegetables, potatoes and potato goods, coffee-tea-cocoa and such, sugar, other food, residual.
Codes: (r1-r21 + 0.909 x residuo1).

v1b. Non-alcoholic drink at home. Non-alcoholic beverages of all sorts except for milk, included above. Codes: (r22 +0.053 x residuo1).

2. Alcoholic beverages and tobacco: v2a+v2b

v2a. Alcoholic drinks at home.
Codes: (r23)

v2b. Tobacco.
Codes: (r24 + 0.038 £ residuo1).

3. Clothing and footwear: v3a+v3b

v3a. Clothing and footwear. It includes men wear and footwear, women wear and footwear, children and baby wear and footwear at a very detailed level.
Codes: (i2001-i2072 i2077 i2078-i2091 i2094-i2095).

v3b. Accessories. It includes wedding rings, watches, other jewelry, handbags, luggage, umbrellas and pipes.
Codes: (i8024-i8029 and i8035-i8037 i8032).

4. Private transport goods: v4a+v4b

v4a. Transport Purchases. It includes purchases of new and used cars, bikes, motorcycles and other such as caravans and boats.
Codes: (i6001-i6005)

v4b. Fuel. It includes gas, diesel and other oils.
Codes: (i6019-i6022).

5. Furnishing and appliances: v5a+v5b

v5a. Furniture and furnishing. It includes all sorts of furniture and textiles for the house. Also, baby cribs and strollers.
Codes: (i4001-i4027 i4029-i4041 i4043 i8033).

v5b. Appliances. It includes refrigerators, freezers, washing machines, dishwashers, stoves, heaters, water heaters, fans, sewing machines, ovens, smoke extractors, garden appliances (considered durables); other small kitchen appliances, dishes, paper napkins, toilet paper, disposable dishes, some cleaning products and tools, clocks and alarm clocks (considered non-durables).
Codes: (i4044-i4069 for durables; i4073-i4087 i4088-i4105 i8030-i8031 for non-durables).

6. Entertainment goods: v6a+v6b+v6c+v6d

v6a. Books, Newspapers & Computers. It includes books (excluding textbooks), newspapers, magazines, posters, maps, calendars, paper and writing tools except those for school (non-durables). Computers, calculators and typewriters (durables).
Codes: (i7065-i7069 i8038-i8039 for non-durables and i7019-i7020 for durables).

v6b. Cds, tapes, audio and video equipment. It includes cds, tapes and video games (non-durables). TV sets, video sets, radio sets, stereos, cameras, accessories such as microphones (durables).
Codes: (i7023-i7027 for non-durables and i7001-i7016 i7044 for durables).

v6c. Toys and Hobbies. It includes instruments, saws, drills and pets (purchases, fees, services)(durables) and toys, hunting small items, albums, plants and flowers, films, etc. (non-durables).
Codes: (i7018 i7021 i7042-i7043 i7064 i9003 for durables and i7030 i7032-i7041 i7062-i7063 for non-durables).

v6d. Holiday goods. It includes sport goods (skies, rackets, skates, etc.) (non-durables); caravans, boats, etc. (durables).
Codes: (i7029 i7031 for durables and i7028 i7022 for durables).

7. Personal goods: v7

v7. Personal goods. It includes mainly personal hygiene products (except for toilet paper in 5b) as non-durables, and electrical savers and hair-dryers as durables .
Codes: (i8006 i8008-i8023 i8034 for non-durables and i8005 i8007 for durables).

8. Home energy: v8

v8. Home energy. It includes expenditures on water, electricity, fuels and gas, wood, coal and other heating sources. It also includes garbage and sewage fees.
Codes: (i3071-i3103).

SERVICES

9. Food and beverages away from home: v9

v9 . Food away. Includes all food and drink outside the house, including meals and drinks for students and professors at school dining halls and other school facilities. Some of these expenditures may be realized when away from home on vacation. Codes: (i8040-i8060).

10. Holiday services: v10a+v10b+v10c. We cannot distinguish between holidays abroad

and within the country.

v10a. Package tours. All inclusive holidays.
Codes: (i8066).

v10bc . Holidays. Mainly hotels, camping, and rental of other holiday accommodations such as bungalows, chalets, villas. It does not include transportation.
Codes: (i8061-i8062 i8065).

11. Housing: v11a+v11b+v11c.

v11a. Rent and home related service charges. Rent of apartments and houses (furnished and unfurnished). Also sublets and rooms.
Codes: (i3001-i3015).

v11b. Imputed rents for homeowners. It includes imputed rent, community charges (excluding all utilities) and local taxes.
Codes: (i3016-i3038).

v11c. House repairs. All sorts of house repairs for all tenure regimes and house insurance.
Codes: (i3039-i3070 i9010-i9011).

12. Household services: v12a+v12b+v12c+v12d.

v12a. Domestic Help. Monetary and in-kind payments to domestic helpers (we cannot distinguish cleaning and cooking from baby-sitting). Clothing for domestic workers and insurance fees for them. Other services like snow renewal, chimney cleaning and such.
Codes: (i4109-i4114).

v12b. Childcare. It includes kindergarten fees for children up to 5 years.
Codes: (i7070-i7077 i7141 i8072).

v12c. Laundry Services. It includes professional washing, dry-cleaning and ironing of clothing and house textiles, also small repairs of these textiles.
Codes: (i4106-i4107 i2075-i2076).

v12d. Repairs. It includes clothing and shoe repairs, repairs of appliances (washing machines, fridge, heaters, etc.), repairs of audio and video equipment, repairs of textiles and furnishings for the home. Also clothing rental (disguise and such).
Codes: (i2073-i2074 i2092-i2093 i4108 i4028 i4042 i4070-i4072 i7045-i7046).

13. Health goods and services: v13a+v13b

v13a. Payment to doctors. General medicine, specialists, dentist, psychologist, psychiatrist, X-rays, lab-work, medical services in spas and private insurance fees.
Codes: (i5019-i5039 i5040-i5041).

v13b. Drugs and other medical goods. All medicines, glasses, lenses, hearing aid, birth control, disposable baby wear, crutches, etc.
Codes: (i5001-i5018).

14. Personal services: v14

v14. Personal Services. It includes hairdressers, sauna and massage services.
Codes: (i8001 – i8004).

15. Public transport services: v15

v15. Public transport services. It includes both city and intercity transport services. Rental cars, taxi, limousine, bus, subway, train, maritime transportation and air transportation. It also includes monthly passes for city and intercity transportation, school transportation and moving expenses.
Codes: (i6030-i6035) for local and (i6028 i6036-i6045) for intercity.

16. Private transport services: v16a+v16b+v16c.

v16a. Repairs. It includes car repairs including pieces and fluids, periodical revisions, tune-ups, car wash. Codes: (i6006-i6018 i6023).

v16b. Car insurance, road-tax, license fees. It includes insurance, parking fees, rental of garage, tolls, road-tax, etc.
Codes: (i6025-i6027 i6029 i9001-i9002 i9012-i9013).

v16c. Driving lessons
Codes: (i6024).

17. Communication services: v17

v17. Communication services. It includes expenses on postcards, letters, other postal services, faxes from public establishments, private telephone use, public telephone use, fees for connection of telephone service, telephone and answering machine charges (we cannot distinguished between rental and purchase). Until very recently in Spain, most people rented phone equipment from the telephone company.
Codes: (i6046-i6054).

18. Education services: v18

v18. Education and training services. It includes registration fees in private and public centers for all levels of education, textbooks and school materials, insurance fees for medical exams at schools, lodging and meals for students living away from home, fees from parents' associations.
Codes: (i7078-i7083 i7088-i7090 i7093-i7097 i7100-i7102 i7105-i7107 i7110-i7119 i7122-i7125 i7128-i7130 i7133 i7135-i7136 i7139-i7140 i7142-i7148 i8063-i8064 i8070) for fees and lodging. (i7084-i7087 i7091-i7092 i7098-i7099 i7103-i7104 i7108-i7109 i7120-i7121 i7126-i7127 i7131-i7132 i7134 i7137 i7138) for books.

19. Entertainment services: v19

v19. Entertainment services. It includes expenditure on cinema, theater, concerts, ballet, soccer, soccer year passes, other sports, bullfighting, discos, casinos, swimming pools, gyms, rental of video and audio equipment, satellite TV fees, movie rentals, hunting licenses and bingo, lottery and such.
Codes: (i7047-i7061 i9004 i9018-i9019).

20. Miscellaneous services: v20a+v20b+v20c

v20a. Financial and insurance services. It includes financial services and some insurance (no car (16b), house (11c), medical (13b)).
Code: (i8067 i9014-i9016).

v20b. Contributions. It includes donations to charities and monetary transfers (regular and occasional) to other households or family members living outside the household. Codes: (i9017 i9020-i9025).

v20c. Other services. It includes several services in a few major categories: (1) non-financial services by firms (from lawyers to astrologers), (2) fees for different legal documents, (3) other services (documents, photocopies, funeral fees, wedding fees, fines, etc.)
Codes: (i8068-i8069 i8071 i8073-i8074 i9017 i9005-i9006).

Table A1. Complete Budget Shares at Current and Constant Prices

	CURRENT				CONSTANT			
	1973-74	1980-81	1990-91	change	1973-74	1980-81	1990-91	change
1. Food and non-alcoholic beverages	42.26	35.50	27.48	-35.0	41.96	35.345	27.213	-35.1
1a. Food	41.73	34.98	26.87	-35.6	41.44	34.831	26.605	-35.8
1b. Non-alcoholic beverages	0.53	0.52	0.60	13.5	0.52	0.514	0.608	16.9
2. Alcoholic beverages and tobacco	3.97	2.79	2.46	-38.1	3.95	2.784	2.450	-37.9
2a. Alcoholic beverages	2.30	1.58	0.97	-58.0	2.40	1.658	0.960	-60.0
2b. Tobacco	1.67	1.21	1.49	-10.7	1.54	1.127	1.489	-3.5
3. Clothing and footwear	7.45	8.20	8.76	17.6	7.73	8.573	8.707	12.6
3a. Clothing and footwear	7.06	7.94	8.41	19.0	7.39	8.338	8.354	13.1
3b. Accessories	0.39	0.26	0.35	-8.1	0.34	0.235	0.352	2.3
4. Private transport goods	3.32	5.45	5.74	73.0	2.56	4.124	5.717	123.3
4a. Durables: cars, bikes & motors	1.51	2.20	2.79	84.6	1.50	2.188	2.763	84.8
4b. Fuel	1.81	3.25	2.95	63.3	1.06	1.936	2.954	177.5
5. Furnishing and appliances	6.24	6.00	4.47	-28.3	5.77	5.528	4.408	-23.5
5a. Durables: furniture & furnishing	3.24	2.68	1.46	-54.9	3.11	2.578	1.450	-53.4
5b. - Appliances, non-durables	2.19	2.42	2.15	-1.7	2.02	2.236	2.121	4.9
- Appliances, durables	0.80	0.90	0.85	6.4	0.63	0.713	0.837	32.4
6. Entertainment goods	1.87	2.53	2.68	43.0	1.65	2.140	2.633	60.0
6a. - Books, newspapers	0.53	0.64	0.81	52.7	0.58	0.708	0.806	38.4
- Durable: Computer	0	0.00	0.09		0.00	0.000	0.090	
6b. – Cd's & tapes	0.24	0.10	0.28	18.8	0.22	0.093	0.283	26.9
- Durables: Audio and video equipment	0.59	1.10	0.72	21.4	0.37	0.684	0.693	88.5
6c. - Toys and hobbies, non-durables	0.35	0.54	0.59	71.0	0.34	0.526	0.583	74.0
- Durables: instruments & pets	0.05	0.09	0.12	125.5	0.05	0.081	0.120	142.3
6d. - Holiday goods: sport-goods, rental of equipment	0.00	0.04	0.02		0.00	0.032	0.024	
- Durables: boat, caravan & tents	0.11	0.02	0.03	-69.7	0.09	0.016	0.033	-62.1
7. Personal Goods	0.83	0.80	0.97	16.8	0.70	0.674	0.961	37.5
- Non-durables	0.78	0.75	0.93	19.7	0.04	0.039	0.035	-19.4
- Durables: hairdryer, electric shaver	0.05	0.04	0.03	-29.4	0.66	0.635	0.927	41.2
8. Home energy	3.66	4.04	3.96	8.3	3.62	4.008	4.047	11.7
9. Food and beverages away from home	5.57	4.99	7.74	39.0	6.40	5.766	7.821	22.3
10. Holiday Services	0.32	0.27	0.62	94.0	0.43	0.353	0.607	41.8
10a. Package tours and travel insurance	0.08	0.13	0.39	384.1	0.09	0.151	0.369	290.2
10b. Holidays in other countries								
10c. Holidays in the home country (10b+c)	0.24	0.14	0.23	-2.7	0.33	0.201	0.238	-28.6
11. Housing	11.98	15.81	20.21	68.7	12.25	16.335	20.368	66.3
11a. Rent and home related service charges	2.03	1.80	1.31	-35.6	1.82	1.628	1.309	-28.1
11b. Imputed rent for homeowners	7.72	11.69	16.52	113.9	7.97	12.135	16.644	108.8
11c. House repairs	2.23	2.32	2.38	7.1	2.46	2.572	2.414	-1.8
12. Household services	1.22	1.64	1.26	3.0	1.31	1.745	1.264	-3.7
12a. Domestic help	0.69	0.49	0.53	-24.2	0.78	0.557	0.533	-31.7
12b. Childcare and babysitting	0.00	0.22	0.14		0.00	0.245	0.138	
12c. Laundry services	0.00	0.09	0.06		0.00	0.095	0.062	
12d. Repairs	0.53	0.84	0.54	0.7	0.53	0.848	0.530	-0.3

13. Health goods and services	2.68	2.23	2.43	-9.2	2.42	2.007	2.431	0.6
13a. Payment to Doctors	1.50	1.25	1.39	-7.3	1.56	1.306	1.408	-9.7
13b. Drugs and other medical goods	1.18	0.98	1.04	-11.6	0.86	0.701	1.024	19.4
14. Personal services	0.58	0.56	0.65	10.7	0.67	0.641	0.655	-2.4
15. Public transport services	1.69	1.39	1.04	-38.5	1.85	1.522	1.075	-41.9
16. Private transport services	1.46	2.86	3.09	112.5	1.84	3.588	3.216	74.8
16a. Repairs	0.77	1.83	1.38	78.8	0.97	2.265	1.432	47.7
16b. Car insurance. road-tax. license fees	0.68	0.95	1.61	136.0	0.87	1.227	1.681	93.1
16c. Driving lessons	0.00	0.08	0.10		0.00	0.096	0.102	
17. Communication services	0.44	0.91	1.31	200.3	0.34	0.717	1.277	273.7
18. Education and training services	1.66	1.23	1.10	-33.9	1.71	1.262	1.112	-34.9
19. Entertainment services	1.77	1.82	1.83	3.4	1.77	1.824	1.832	3.6
20. Miscellaneous goods and services	1.04	0.99	2.21	112.2	1.09	1.064	2.208	103.0
20a. Financial and insurance services	0.00	0.15	0.12		0.00	0.171	0.116	
20b. Contributions	0.48	0.28	1.32	177.8	0.48	0.285	1.317	176.7
20c. Other services such as passport fees	0.56	0.56	0.77	36.3	0.61	0.607	0.775	26.6
GOODS	69.59	65.31	56.51	-18.8	67.93	63.18	56.14	-17.4
SERVICES	30.41	34.69	43.49	43.0	32.07	36.82	43.86	36.8

APPENDIX B: COMPUTING THE BAUMOL EFFECT

Baumol's cost disease states that the service sector experiences relatively lower productivity growth and, consequently, face relatively higher increasing costs (Baumol, 1967). This translates into relatively higher prices of the commodities produced in these sectors. Consequently, holding quantities demanded constant, the budget shares in the service sector should increase over time. This is referred to as the Baumol effect in the DEMPATEM project (see Blow *et al.*, 2003).

Let $w^t k,h$ be commodity k's budget share of household h at current prices of year t, where t = 1, 2 corresponds in the Spanish case to 1980-81 and 1990-91, respectively. Let $w^t k,h$ be commodity k's budget share of household h at reference prices **p** = Winter 1991. The change in commodity's k budget share at current prices can be written as:

$(w^2k,h - w^1k,h) = (w^2k,h - w^2k,h) + (w^2k,h - w^1k,h) + (w^1k,h - w^1k,h)$. (a)

The second term at the RHS in equation (a) is due to quantity changes, holding prices constant. These changes may occur for different reasons that are reviewed in Section IV. The first and third term in that expression is the change in the budget share due solely to price changes and holding quantities constant. The sum of these changes is the Baumol effect at the individual level.

To compute the Baumol effect, the procedure reviewed in Blow *et al.* (2003) has been followed. Let H be the number of households in period t, and let $x_{k,h}$ be the expenditures of household h in commodity k in period t, so that $x_h^t = ? k\, x_{k,h}^t$ is household h's total expenditures. The individual quantities acquired by any household, as well as the individual unit prices paid for them, are unobservable. Only expenditures in specific commodities are observed. However, under the assumption that all households pay the same prices at a given moment in time, the expenditures by household h in commodity k at current prices, $x_{k,h}$, is equal to the product of the quantity acquired, $q_{k,h}^t$, and the corresponding price, p_k^t, i.e. $x_{k,h}^t = p_k^t q_{k,h}^t$. Denote by $I_k^t = (p_k^t / p_k^0)$ commodity's k price index in period t published by the statistical office, where p_k^0 is the price of that commodity in base period 0. Let **p** be the reference price vector and consider the expression

$$(I_k / I_k^t) = (p_k/p_k^0)/(p_k^t/p_k^0) = (p_k/p_k^t).$$

Then

$$(x_{k,h}^t)(I_k^t / I_k^t) = (p_k^t q_{k,h}^t)(p_k / p_k^t) = p_k q_{k,h}^t$$

provides the expenditures of household h in commodity k at reference prices. Household h's budget share at those prices is defined as

$$w_{k,h}^t = p_k q_{k,h}^t / \Sigma_k p_k q_{k,h}^t$$

The average budget share at reference prices is simply

$$w_k^t = (1/H) \Sigma_k w_{k,h}^t$$

In practice, the available information refers to household expenditures in the DEMPATEM categories (see Appendix A) during 1980-81 and 1990-91, as well as official monthly price indexes for the 110 commodities (called *subclasses*) of the Consumer Price Index system based in 1992, i.e. **p**0 = 1992. The relationship between the 45 DEMPATEM categories and the 110 *subclasses* is in Table B.[8] Reference prices are taken to be Winter 1991 prices. The official series of monthly price indexes Ik^t start in January 1993. Fortunately, Lorenzo (1998) has constructed such series for the 110 *subclasses* of the 1992 system back to January 1983. Therefore, expressing Spring, Summer and Autumn 1990 household expenditures at Winter 1991 prices, poses no problem. For the 1980-81 data, only the gap from January 1983 to Spring, Summer, and Autumn 1980 and Winter 1981 should be filled in. This is done using the general CPI based in 1976 that covers the January 1977 to August 1985 period.

[8] *Whenever a DEMPATEM category k corresponds to two or more* subclasses*, the price index used is a weighted average of the indexes for the* subclasses *in question. The weights are constructed using the official weights of the* subclasses *involved.*

Table B. The Relationship Between the DEMPATEM Categories and the 110 Subclasses from the Spanish SH CPI System Base in 1992

DEMPATEM	1992-SUBCLASES
GOODS	
1. Food	SS001-SS032
2. Non alcoholic beverages	SS033
3. Alcoholic beverages	SS034-SSS037
4. Tobacco	SS038
5. Clothing and footwear	SS039-SS044, SS046-SS048
6. Accessories	SS103,SS104
7. Private transport goods	SS078, SS079
8. Fuel	SS081
9. Furniture and furnishings (durable)	SS057-SS061
10. Appliances, non-durables	SS066-SS069
11. Appliances, durables	SS062-SS065
12. Books, newspapers	SS094, SS105
13. Durable: computer	SS086-SS088
14. CD's and tapes	SS091
15. Durables: audio and video equipment	SS086-SS088
16. Toys and hobbies	SS090
17. Durables: instruments and pets	SS091
18. Holiday goods, sport goods, rental of equipment	SS089
19. Durables: boat, caravan, and tents	SS089
20. Personal goods, nondurables	SS101
21. Personal goods, durables	SS102
22. Home energy (and repair goods)	SS054-SS056
SERVICES	
23. Food and beverages away	SS106
24. Package tours	SS108
25. Holidays	SS107
26. Rent and home related services	SS050
27. Imputed rent for homeowners	SS050, SS051
28. House repairs and insurance	SS052, SS053
29. Domestic help	SS071
30. Childcare, babysitting (and residences)	SS070
31. Laundry services	SS070
32. Repairs	SS045, SS049
33. Payments to doctors	SS074-SS077
34. Drugs and other medical goods	SS072, SS073
35. Personal services	SS100
36. Public transport services	SS083, SS084
37. Private transport, repairs	SS080, SS082
38. Private transport, insurance, tax	SS080, SS082
39. Private transport, driving lessons	SS080, SS082
40. Communication services	SS085
41. Education and training services	SS095-SS099
42. Entertainment services	SS092, SS093
43. Financial	SS109
44. Contributions	GENERAL CPI
49.Other services such as passport fees	SS110

APPENDIX C: ESTIMATION RESULTS

Table C1. Estimation Results for the Tables 20 and 23

1990-1991	Constant	Ln N	%				Age/10	Age²/100	No. empl	AAE	AAE	Ln EXP
Parameter Estimates			6-17	18-30	31-64	65+					kid<6	
Food and non-alcoholic beverages	2.936	0.125	-0.014	-0.063	-0.002	0.029	0.041	-0.003	-0.007	-0.012	-0.003	-0.197
Alcoholic beverages and tobacco	0.304	0.026	-0.011	0.029	0.028	0.017	-0.007	0.000	0.001	0.005	-0.005	-0.021
Clothing and Footwear	-0.298	-0.036	0.000	-0.051	-0.057	-0.053	0.011	-0.001	0.000	0.001	-0.010	0.034
Private Transport Goods	-0.077	0.009	-0.018	0.011	0.011	-0.003	-0.013	0.001	0.006	-0.002	-0.005	0.010
Furnishing and Appliances	0.199	0.003	-0.007	-0.005	-0.003	-0.004	0.003	0.000	0.000	-0.001	-0.001	-0.012
Entertainment Goods	-0.237	-0.013	-0.012	-0.015	-0.024	-0.023	-0.006	0.000	-0.001	0.002	0.002	0.022
Personal Goods	-0.024	0.000	0.000	0.007	0.001	-0.002	0.001	0.000	0.000	0.000	0.001	0.002
Home Energy	0.226	-0.017	-0.005	-0.031	-0.021	-0.011	0.000	0.000	-0.001	-0.005	0.004	-0.010
Food and beverages away from home	-0.363	-0.003	0.053	0.132	0.087	0.061	-0.022	0.002	0.015	0.011	-0.012	0.031
Holiday Services	-0.244	-0.014	0.004	0.001	0.005	0.009	-0.004	0.000	-0.002	0.004	0.000	0.020
Household Services	-0.402	-0.032	-0.037	-0.070	-0.059	-0.051	-0.010	0.001	-0.002	0.000	0.032	0.037
Personal Services	-0.085	-0.004	0.002	0.003	0.004	0.007	0.000	0.000	0.000	-0.001	0.000	0.007
Public Transport Services	-0.005	0.002	0.019	0.026	0.016	0.014	0.002	0.000	-0.002	0.003	0.001	0.000
Private Transport Services	-0.363	-0.014	-0.018	-0.007	0.002	-0.009	-0.011	0.001	0.002	-0.001	-0.003	0.033
Communication Services	-0.104	-0.012	0.005	0.001	0.002	0.004	0.002	0.000	-0.002	-0.002	0.002	0.009
Entertainment Services	-0.143	0.001	0.019	0.027	0.020	0.016	0.000	0.000	0.002	-0.003	-0.001	0.010
Miscellaneous services	-0.321	-0.022	0.021	0.005	-0.011	-0.003	0.012	-0.001	-0.006	0.000	-0.001	0.024
Services	-2.029	-0.097	0.068	0.118	0.067	0.049	-0.030	0.003	0.002	0.011	0.018	0.171
t-value												
Food and non-alcoholic beverages	57.77	29.48	-1.37	-5.51	-0.13	2.38	7.93	-6.42	-4.00	-2.89	-0.53	-49.54
Alcoholic beverages and tobacco	19.87	20.64	-3.65	8.33	7.77	4.69	-4.70	2.47	2.23	4.45	-2.89	-17.21
Clothing and Footwear	-7.13	-10.22	-0.04	-5.44	-5.84	-5.19	2.60	-3.10	0.19	0.29	-1.91	10.51
Private Transport Goods	-4.30	6.19	-4.87	2.83	2.73	-0.68	-7.19	4.81	9.80	-1.68	-2.25	7.30
Furnishing and Appliances	14.04	2.54	-2.41	-1.50	-0.94	-1.12	2.07	-1.90	-0.08	-0.51	-0.37	-11.23
Entertainment Goods	-15.50	-10.50	-3.90	-4.28	-6.62	-6.28	-3.59	3.25	-2.27	1.69	0.88	18.31
Personal Goods	-2.60	-0.07	-0.23	3.32	0.33	-0.85	1.22	-0.77	-0.48	-0.40	0.62	3.18
Home Energy	11.96	-11.02	-1.36	-7.37	-4.80	-2.31	-0.24	1.84	-2.33	-2.96	1.58	-6.49
Food and beverages away from home	-9.76	-0.86	7.00	15.78	10.02	6.82	-5.77	4.50	12.19	3.68	-2.60	10.79
Holiday Services	-16.73	-11.35	1.49	0.37	1.44	2.52	-2.75	1.99	-4.57	3.06	-0.15	17.26
Household Services	-21.68	-20.79	-9.75	-16.87	-13.53	-11.27	-5.07	7.13	-3.97	-0.06	14.30	25.40
Personal Services	-9.29	-5.19	0.86	1.46	1.99	3.14	-0.09	0.46	-0.64	-1.57	-0.15	9.28
Public Transport Services	-0.38	2.21	7.73	9.46	5.56	4.62	1.59	-1.54	-6.05	2.64	0.38	-0.36
Private Transport Services	-16.60	-7.45	-3.99	-1.52	0.29	-1.75	-4.82	2.55	2.21	-0.52	-0.99	19.28
Communication Services	-11.72	-16.12	2.67	0.55	1.03	1.84	2.24	-1.10	-7.62	-2.22	1.75	13.12
Entertainment Services	-10.10	0.63	6.50	8.50	6.15	4.65	0.14	-0.37	3.20	-2.34	-0.40	9.38
Miscellaneous services	-11.16	-9.16	3.55	0.82	-1.63	-0.40	4.22	-2.53	-6.57	0.09	-0.38	10.75
Services	-37.59	-21.55	6.22	9.73	5.29	3.70	-5.41	5.22	1.31	2.55	2.72	40.45

1980-81	Constant	Ln N	%				Age/10	Age^2/100	No. employ	AAE	AAE	Ln Exp.
Parameter Estimates			6-17	18-30	31-64	65+					kid<6	
Food and non-alcoholic beverages	3.001	0.143	0.007	-0.035	0.059	0.059	0.021	-0.001	-0.005	-0.019	0.007	-0.200
Alcoholic beverages and tobacco	0.224	0.023	0.003	0.040	0.041	0.030	-0.005	0.000	0.001	0.001	-0.003	-0.016
Clothing and Footwear	-0.260	-0.024	0.023	-0.003	-0.027	-0.035	0.014	-0.001	-0.001	-0.004	0.003	0.028
Private Transport Goods	-0.318	-0.008	-0.028	-0.007	-0.006	-0.010	-0.019	0.001	0.005	-0.001	-0.007	0.032
Furnishing and Appliances	0.083	0.001	-0.011	-0.007	-0.009	-0.009	0.006	-0.001	-0.001	-0.001	-0.001	-0.004
Entertainment Goods	-0.235	-0.015	-0.003	-0.005	-0.014	-0.011	-0.006	0.000	-0.002	0.001	0.000	0.021
Personal Goods	-0.039	-0.001	0.001	0.007	0.001	0.000	0.002	0.000	0.000	0.001	-0.001	0.003
Home Energy	0.220	-0.018	-0.007	-0.023	-0.024	-0.009	0.001	0.000	-0.003	-0.001	0.001	-0.009
Food and beverages away from home	-0.296	-0.019	0.017	0.054	0.022	0.016	-0.012	0.001	0.007	0.013	-0.015	0.028
Holiday Services	-0.103	-0.007	0.004	0.000	0.001	0.002	-0.001	0.000	-0.001	0.001	0.002	0.008
Household Services	-0.410	-0.036	-0.044	-0.074	-0.066	-0.054	0.000	0.000	-0.002	0.002	0.023	0.037
Personal Services	-0.092	-0.006	0.000	-0.001	0.003	0.003	0.002	0.000	0.000	0.001	-0.001	0.007
Public Transport Services	-0.034	0.000	0.020	0.028	0.017	0.014	0.001	0.000	-0.003	0.003	0.001	0.002
Private Transport Services	-0.308	-0.010	-0.017	-0.006	-0.005	-0.007	-0.014	0.001	0.003	0.001	-0.005	0.029
Communication Services	-0.152	-0.012	-0.001	-0.005	-0.004	-0.004	0.002	0.000	-0.002	0.000	0.000	0.013
Entertainment Services	-0.189	0.000	0.031	0.049	0.023	0.021	0.003	0.000	0.004	0.003	-0.004	0.012
Miscellaneous services	-0.093	-0.012	0.006	-0.013	-0.010	-0.006	0.003	0.000	0.000	0.000	0.001	0.008
Services	-1.676	-0.100	0.015	0.033	-0.021	-0.014	-0.015	0.001	0.006	0.023	0.001	0.146
t-value												
Food and non-alcoholic beverages	74.71	37.08	0.80	-3.67	5.85	5.52	3.97	-1.97	-3.34	-5.90	1.23	-65.76
Alcoholic beverages and tobacco	20.82	22.59	1.52	15.59	15.00	10.33	-3.18	1.68	3.34	0.63	-1.93	-20.08
Clothing and Footwear	-10.55	-10.24	4.45	-0.44	-4.36	-5.36	4.34	-4.44	-0.86	-1.83	0.87	14.85
Private Transport Goods	-18.63	-5.16	-7.68	-1.73	-1.50	-2.09	-8.56	5.34	6.59	-0.65	-3.12	24.54
Furnishing and Appliances	7.75	0.66	-4.85	-2.58	-3.27	-3.27	4.21	-4.11	-2.53	-1.63	-0.35	-4.94
Entertainment Goods	-25.56	-16.89	-1.78	-2.33	-5.82	-4.62	-4.70	3.84	-4.94	1.44	0.01	30.67
Personal Goods	-6.76	-1.63	0.86	5.11	0.78	0.06	3.18	-2.67	0.51	1.52	-1.15	6.79
Home Energy	16.94	-14.46	-2.65	-7.47	-7.37	-2.64	0.57	0.78	-4.76	-0.64	0.50	-9.54
Food and beverages away from home	-12.62	-8.49	3.36	9.64	3.70	2.57	-3.78	2.40	7.71	7.09	-4.64	15.82
Holiday Services	-12.91	-9.14	2.51	0.01	0.31	0.83	-0.98	1.10	-3.17	2.27	1.47	13.83
Household Services	-29.11	-26.45	-14.81	-21.78	-18.63	-14.37	-0.08	2.08	-3.93	2.05	11.98	35.03
Personal Services	-16.71	-11.03	0.14	-0.42	1.83	2.37	3.32	-3.06	-1.23	1.20	-1.58	17.01
Public Transport Services	-3.49	0.30	9.56	11.69	6.62	5.33	0.96	-0.78	-6.87	3.26	0.88	3.13
Private Transport Services	-16.02	-5.33	-4.27	-1.27	-1.06	-1.31	-5.49	3.26	4.05	0.51	-2.01	20.17
Communication Services	-24.67	-19.52	-0.80	-3.50	-2.63	-2.46	3.01	-1.60	-5.76	-0.67	-0.14	26.87
Entertainment Services	-17.33	0.07	13.31	18.62	8.35	7.36	1.96	-1.47	8.04	2.96	-2.72	15.16
Miscellaneous services	-8.97	-11.89	2.68	-5.12	-3.94	-2.30	2.13	-1.35	-1.09	0.02	0.45	10.73
Services	-46.22	-28.86	1.96	3.77	-2.31	-1.49	-3.13	2.56	3.80	8.00	0.19	53.16

Table C2. Estimation Results for Table 24

Parameter	g1	g2	g3	g4	g5	g6	s7	s8	s9	s10	s11	s12	Tot. serv.
Constant	2.938	0.310	-0.404	-0.085	0.339	-0.160	-0.336	-0.610	-0.245	0.051	-0.367	-0.432	-1.939
Ln N	0.123	0.019	-0.036	0.006	-0.013	-0.005	-0.015	-0.040	-0.001	0.007	-0.018	-0.027	-0.094
% 6-17	-0.013	-0.008	-0.005	-0.015	-0.016	-0.013	0.058	-0.052	0.018	0.019	-0.016	0.024	0.070
18-30	-0.062	0.026	-0.053	0.012	-0.039	-0.005	0.125	-0.066	0.028	0.028	-0.008	0.013	0.121
31-64	-0.001	0.023	-0.057	0.008	-0.024	-0.017	0.078	-0.049	0.026	0.020	-0.005	-0.002	0.057
65+	0.029	0.013	-0.052	-0.006	-0.014	-0.021	0.052	-0.038	0.024	0.017	-0.015	0.010	0.050
Age	0.004	-0.001	0.001	-0.001	0.000	0.000	-0.002	-0.001	0.000	0.000	-0.001	0.002	-0.003
Age^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No.employ	-0.006	0.003	-0.002	0.005	-0.004	0.001	0.018	-0.005	0.001	-0.002	0.001	-0.012	0.002
AAE	-0.011	0.005	0.002	-0.003	-0.005	0.001	0.010	0.002	-0.003	0.003	-0.002	-0.001	0.010
AAE. k= 6	-0.001	-0.005	-0.009	-0.004	0.002	0.000	-0.012	0.050	-0.002	0.000	-0.002	0.002	0.016
F. Head	0.001	-0.013	0.013	-0.005	0.012	0.005	-0.026	0.005	0.002	0.002	-0.009	0.013	-0.013
Prim. Sch	0.003	-0.003	0.000	0.002	-0.001	0.002	-0.004	-0.003	0.001	0.000	-0.001	0.004	-0.003
High Sch	-0.003	-0.005	-0.003	0.003	-0.004	0.008	-0.008	0.001	0.002	0.002	0.002	0.005	0.004
College	-0.017	-0.004	-0.007	0.002	-0.005	0.015	-0.014	0.018	-0.002	0.003	0.004	0.009	0.017
soc2	-0.001	-0.002	-0.007	0.005	0.001	-0.001	-0.002	0.000	0.002	-0.003	0.003	0.005	0.005
soc3	0.001	0.002	0.001	0.002	0.000	0.001	-0.005	-0.002	0.003	-0.001	0.000	-0.001	-0.006
soc4	0.005	0.005	-0.004	0.001	-0.001	0.005	0.007	-0.004	0.004	-0.001	-0.003	-0.013	-0.011
Owner	-0.002	-0.002	0.003	0.001	0.005	0.000	-0.003	0.001	-0.002	0.000	0.001	-0.001	-0.005
Winter	-0.008	0.002	0.005	-0.001	-0.012	-0.005	0.010	0.008	0.002	0.001	-0.001	-0.001	0.020
Spring	0.008	0.003	-0.014	0.000	-0.017	-0.006	0.016	0.011	0.003	0.002	0.000	-0.005	0.027
Summer	0.010	0.003	0.006	-0.002	-0.015	-0.004	-0.004	0.006	0.008	0.001	-0.003	-0.007	0.001
Town size1	-0.007	0.000	0.000	-0.003	0.002	0.004	0.003	0.003	0.005	-0.001	-0.001	-0.004	0.004
Town size2	-0.012	0.000	-0.008	-0.005	0.000	0.009	0.003	0.006	0.008	0.005	-0.003	-0.004	0.016
_Iccaa_2	-0.014	-0.007	0.007	0.004	0.014	-0.002	-0.016	0.003	0.005	-0.003	0.007	0.002	-0.001
_Iccaa_3	0.000	-0.001	0.009	0.005	-0.009	-0.001	-0.011	-0.010	0.002	0.001	0.012	0.002	-0.004
_Iccaa_4	-0.034	-0.005	-0.025	0.015	0.002	-0.001	-0.004	0.007	0.009	0.008	0.016	0.011	0.047
_Iccaa_5	0.032	-0.006	-0.032	0.006	-0.010	0.002	-0.009	0.005	0.002	0.010	0.009	-0.009	0.008
_Iccaa_6	-0.043	-0.009	0.026	0.011	-0.004	0.003	0.002	-0.002	-0.001	0.004	0.015	0.000	0.017
_Iccaa_7	-0.002	-0.009	0.001	0.000	0.007	-0.003	-0.008	0.002	0.002	-0.003	0.007	0.005	0.004
_Iccaa_8	-0.017	-0.009	0.001	0.000	0.015	-0.002	-0.007	0.002	0.004	-0.004	0.008	0.009	0.011
_Iccaa_9	0.012	-0.006	-0.008	0.003	0.010	0.002	-0.021	-0.001	0.008	-0.001	0.011	-0.009	-0.013
_Iccaa_10	-0.025	-0.008	-0.003	0.008	0.005	0.002	-0.007	0.007	0.009	-0.004	0.014	0.003	0.021
_Iccaa_11	-0.051	-0.009	0.029	0.003	-0.001	-0.001	0.000	0.012	0.008	-0.003	0.008	0.006	0.030
_Iccaa_12	0.039	0.001	-0.002	0.005	-0.015	-0.003	-0.024	-0.003	-0.004	-0.001	0.009	-0.003	-0.026
_Iccaa_13	0.008	-0.006	-0.021	-0.001	0.004	0.000	0.010	-0.005	0.006	0.013	0.001	-0.009	0.017
_Iccaa_14	-0.010	0.002	-0.007	0.015	0.008	-0.004	-0.015	-0.002	0.004	-0.007	0.010	0.007	-0.004
_Iccaa_15	-0.001	-0.008	0.005	-0.004	0.016	-0.002	-0.011	-0.003	0.006	-0.004	0.006	0.000	-0.007
_Iccaa_16	0.004	-0.006	-0.007	-0.001	0.000	-0.003	0.007	-0.001	0.003	0.001	0.008	-0.005	0.012
_Iccaa_17	0.013	-0.003	-0.015	-0.002	0.009	-0.003	-0.003	0.002	0.007	-0.009	0.001	0.004	0.000
_Iccaa_18	0.031	0.008	-0.001	-0.007	-0.005	0.001	-0.016	-0.002	0.007	-0.001	-0.006	-0.010	-0.027
Ln exp.	-0.196	-0.020	0.043	0.011	-0.015	0.015	0.032	0.052	0.017	-0.005	0.033	0.033	0.162
t-value													
Constant	-34.00	-12.00	9.36	5.61	-6.00	7.95	7.95	21.00	9.52	-3.90	14.00	10.00	28.00
Ln N	23.00	13.00	-8.70	3.58	-5.60	-2.90	-4.20	-18.00	-0.49	5.56	-8.50	-9.20	-18.00
% 6-17	-1.10	-2.70	-0.52	-4.30	-3.50	-3.70	7.69	-6.90	5.21	7.56	-3.60	3.88	6.39
18-30	-5.00	7.77	-5.40	2.98	-7.40	-1.30	15.00	-13.00	7.45	10.00	-1.70	1.93	9.82
31-64	-0.13	6.62	-5.60	1.97	-4.30	-4.00	8.84	-9.00	6.64	6.76	-1.10	-0.27	5.29
65+	2.19	3.58	-4.90	-1.30	-2.40	-4.80	5.71	-6.70	5.83	5.72	-2.90	1.33	3.79
Age	6.83	-4.40	1.84	-6.20	-0.67	-1.10	-5.70	-5.20	0.05	2.42	-3.80	4.35	-4.40
Age^2	-5.60	1.99	-2.40	4.37	1.85	0.79	4.19	6.53	-0.08	-2.40	2.23	-2.40	4.68
No.employ	-3.00	5.31	-0.96	8.09	-4.40	0.90	14.00	-5.60	2.16	-4.10	0.94	-11.00	1.24
AAE	-2.50	3.90	0.69	-1.90	-2.40	0.98	3.45	1.09	-2.20	2.86	-1.20	-0.24	2.20
AAE. k= 6	-0.10	-2.60	-1.70	-1.80	0.80	0.07	-2.60	11.00	-0.89	-0.09	-0.87	0.55	2.39
F. Head	0.22	-15.00	5.45	-5.50	8.87	5.21	-12.00	3.68	2.62	2.49	-7.40	7.68	-4.20
Prim. Sch	1.06	-3.90	0.17	1.63	-1.10	2.37	-2.20	-2.40	0.81	0.02	-0.47	2.68	-0.97
High Sch	-0.63	-3.70	-0.93	2.06	-2.10	5.20	-2.50	0.31	1.54	1.86	1.08	2.11	0.89
College	-2.90	-2.80	-1.60	1.11	-2.20	7.82	-3.70	7.33	-1.40	2.65	1.62	2.87	2.96
soc2	-0.19	-1.70	-1.80	3.37	0.49	-0.76	-0.62	-0.18	1.43	-2.30	1.56	1.75	1.01
soc3	0.20	1.39	0.16	1.65	-0.10	0.61	-1.60	-1.20	2.37	-0.90	-0.12	-0.51	-1.40
soc4	1.04	3.39	-0.96	0.61	-0.62	2.81	1.89	-1.70	2.78	-1.30	-1.50	-4.70	-2.10
Owner	-0.78	-2.10	1.38	0.76	3.84	-0.38	-1.50	0.40	-2.10	-0.11	1.11	-0.74	-1.50
Winter	-2.90	2.42	2.14	-1.20	-9.80	-5.40	5.29	6.36	2.36	2.11	-0.80	-0.51	6.98
Spring	2.69	3.28	-6.20	0.12	-14.00	-6.40	8.34	8.88	2.98	2.45	0.37	-3.00	9.53
Summer	3.66	4.25	2.61	-2.00	-12.00	-4.00	-2.00	5.42	8.84	0.89	-2.90	-4.20	0.35
Town size1	-2.50	0.37	-0.05	-3.40	1.80	4.15	1.69	2.49	5.09	-1.80	-1.80	-2.70	1.39
Town size2	-4.60	0.68	-3.90	-6.20	0.19	10.00	1.52	5.56	10.00	8.33	-2.40	-2.60	6.07
_Iccaa_2	-2.70	-5.30	1.87	2.20	6.36	-1.40	-4.70	1.61	3.00	-2.30	3.54	0.83	-0.27
_Iccaa_3	0.06	-0.34	1.57	1.91	-2.70	-0.35	-2.20	-3.20	1.04	0.55	4.17	0.41	-0.54
_Iccaa_4	-4.60	-2.60	-4.20	6.32	0.61	-0.27	-0.82	2.29	3.71	4.89	5.52	2.78	6.38
_Iccaa_5	5.48	-3.70	-6.90	3.20	-4.20	1.19	-2.20	1.87	1.19	7.58	3.83	-2.90	1.32
_Iccaa_6	-5.20	-4.00	3.96	3.82	-0.98	0.92	0.29	-0.45	-0.52	1.97	4.49	-0.09	2.02
_Iccaa_7	-0.43	-8.60	0.45	0.06	4.54	-2.20	-3.20	1.09	1.73	-4.20	4.71	2.73	1.18
_Iccaa_8	-3.90	-7.90	0.30	-0.06	8.47	-1.10	-2.50	1.31	2.77	-4.40	4.82	3.72	2.64

_Iccaa_9	2.77	-5.20	-2.30	1.89	5.34	1.55	-6.90	-0.66	5.92	-0.98	6.28	-3.60	-3.00
_Iccaa_10	-5.80	-6.50	-0.91	5.79	2.56	1.35	-2.50	3.69	6.58	-4.10	8.10	1.26	4.85
_Iccaa_11	-9.20	-5.80	6.60	1.47	-0.24	-0.68	-0.08	4.93	4.88	-2.70	3.80	1.83	5.46
_Iccaa_12	9.25	0.79	-0.50	3.36	-8.10	-1.80	-8.30	-1.70	-2.80	-1.10	5.36	-1.20	-6.10
_Iccaa_13	1.41	-3.60	-4.70	-0.30	1.44	-0.13	2.46	-2.00	3.31	10.00	0.52	-2.80	2.82
_Iccaa_14	-1.50	0.99	-1.40	6.94	2.79	-1.80	-3.20	-0.86	2.06	-4.60	3.67	1.83	-0.53
_Iccaa_15	-0.12	-3.80	0.85	-1.40	4.50	-0.56	-2.00	-0.86	2.27	-2.20	1.84	0.07	-0.81
_Iccaa_16	0.92	-5.00	-1.80	-0.71	0.03	-1.60	2.21	-0.65	2.11	0.55	4.13	-1.90	2.62
_Iccaa_17	1.64	-1.30	-2.30	-0.82	2.65	-1.10	-0.63	0.48	2.68	-4.90	0.30	0.80	0.06
_Iccaa_18	3.06	2.99	-0.14	-2.00	-1.20	0.33	-2.40	-0.41	2.26	-0.26	-1.40	-1.80	-2.70
Ln exp.	41.00	16.00	-7.10	-3.60	11.00	-6.80	-6.80	-20.00	-11.00	3.14	-13.00	-11.00	-27.00

Goods and services categories (columns) as the rows of Table C1.

Table C3. Estimation Results for Table 27

1990-1991	Constant	Ln N	%				Age/10	Age²/100	No. empl.	AAE	AAE	Ln EXP.
Parameter Estimates			6-17	18-30	31-64	65+					kid<6	
Food and non-alcoholic beverages	3.002	0.141	0.005	-0.038	0.056	0.057	0.020	-0.001	-0.005	-0.018	0.005	-0.199
Alcoholic beverages and tobacco	0.221	0.023	0.003	0.039	0.041	0.030	-0.005	0.000	0.002	0.000	-0.003	-0.016
Clothing and Footwear	-0.240	-0.023	0.023	-0.003	-0.028	-0.037	0.015	-0.002	-0.001	-0.004	0.003	0.026
Private Transport Goods	-0.184	-0.005	-0.017	-0.004	-0.003	-0.005	-0.012	0.001	0.003	-0.001	-0.005	0.019
Furnishing and Appliances	0.078	0.001	-0.010	-0.006	-0.008	-0.009	0.006	-0.001	-0.001	-0.001	-0.001	-0.004
Entertainment Goods	-0.232	-0.014	-0.004	-0.004	-0.012	-0.010	-0.006	0.000	-0.002	0.001	0.000	0.021
Personal Goods	-0.033	-0.001	0.001	0.006	0.001	0.000	0.002	0.000	0.000	0.001	-0.001	0.003
Home Energy	0.241	-0.017	-0.007	-0.022	-0.023	-0.009	0.001	0.000	-0.002	-0.001	0.001	-0.011
Food and beverages away from home	-0.347	-0.019	0.018	0.063	0.026	0.020	-0.014	0.001	0.008	0.014	-0.017	0.032
Holiday Services	-0.133	-0.009	0.005	0.000	0.001	0.002	-0.002	0.000	-0.001	0.002	0.002	0.011
Household Services	-0.453	-0.039	-0.050	-0.082	-0.074	-0.060	0.000	0.000	-0.003	0.002	0.025	0.041
Personal Services	-0.105	-0.007	0.000	-0.001	0.003	0.004	0.003	0.000	0.000	0.001	-0.001	0.008
Public Transport Services	-0.035	0.001	0.022	0.030	0.018	0.015	0.001	0.000	-0.003	0.003	0.001	0.002
Private Transport Services	-0.379	-0.012	-0.022	-0.007	-0.006	-0.008	-0.018	0.001	0.004	0.000	-0.007	0.036
Communication Services	-0.116	-0.009	-0.001	-0.004	-0.003	-0.003	0.002	0.000	-0.001	0.000	0.000	0.010
Entertainment Services	-0.183	0.001	0.030	0.048	0.023	0.021	0.003	0.000	0.004	0.002	-0.004	0.012
Miscellaneous services	-0.101	-0.012	0.006	-0.014	-0.011	-0.007	0.003	0.000	-0.001	0.000	0.001	0.009
Services	-1.852	-0.105	0.008	0.034	-0.023	-0.016	-0.022	0.002	0.006	0.024	0.000	0.162
t-value												
Food and non-alcoholic beverages	72.0	35.0	0.5	-3.8	5.4	5.1	3.6	-1.8	-2.8	-5.6	0.9	-63.0
Alcoholic beverages and tobacco	21.0	22.0	1.3	15.0	15.0	10.0	-3.2	1.7	3.6	0.3	-1.9	-20.0
Clothing and Footwear	-9.4	-9.3	4.2	-0.5	-4.3	-5.4	4.4	-4.6	-0.7	-2.1	0.7	14.0
Private Transport Goods	-17.0	-4.4	-7.6	-1.6	-1.2	-1.9	-8.3	5.2	6.1	-0.8	-3.2	23.0
Furnishing and Appliances	7.8	0.6	-5.0	-2.6	-3.3	-3.3	4.2	-4.1	-2.5	-1.7	-0.4	-5.0
Entertainment Goods	-25.0	-16.0	-1.8	-1.7	-5.2	-4.2	-4.7	3.8	-5.0	1.4	-0.1	30.0
Personal Goods	-6.7	-1.6	0.8	4.9	0.7	0.0	3.1	-2.6	0.5	1.4	-1.2	6.8
Home Energy	18.0	-13.0	-2.7	-7.0	-6.9	-2.5	0.6	0.7	-4.2	-0.7	0.5	-11.0
Food and beverages away from home	-13.0	-7.8	3.3	10.0	4.0	2.8	-4.0	2.6	7.7	6.8	-4.8	17.0
Holiday Services	-14.0	-9.5	2.6	0.0	0.3	0.8	-1.2	1.4	-3.5	2.2	1.6	15.0
Household Services	-31.0	-28.0	-16.0	-23.0	-20.0	-15.0	-0.2	2.3	-4.3	2.1	13.0	37.0
Personal Services	-17.0	-11.0	0.1	-0.4	1.9	2.4	3.3	-3.0	-1.4	1.0	-1.7	17.0
Public Transport Services	-3.3	0.6	9.7	12.0	6.7	5.4	1.0	-0.8	-6.9	3.2	0.9	2.9
Private Transport Services	-16.0	-5.2	-4.5	-1.3	-1.0	-1.3	-5.8	3.5	4.0	0.2	-2.1	21.0
Communication Services	-24.0	-19.0	-1.0	-3.6	-2.6	-2.5	3.0	-1.6	-6.8	-0.9	-0.2	27.0
Entertainment Services	-17.0	0.5	13.0	18.0	8.3	7.3	2.0	-1.5	8.0	2.8	-2.8	15.0
Miscellaneous services	-9.4	-12.0	2.4	-5.2	-4.0	-2.4	2.1	-1.3	-1.2	-0.3	0.5	11.0
Services	-46.0	-27.0	0.9	3.5	-2.2	-1.5	-4.0	3.2	3.9	7.4	0.1	53.0

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Output

Ronald Schettkat and Lara Yocarini (Jan. 2003)

DEMPATEM in Perspective. State of the Art in the Analysis of Structural Changes.

Book in preparation:

The US-European gaps in Demand and Employment

Wiemer Salverda and Ronald Schettkat, ed.

Working Papers: (See list below)

LIST OF WORKING PAPERS

Working papers are downloadable at http://www.uva-aias.net/lower.asp?id=194

1. **John Schmitt,** Estimating Household Consumption Expenditures in the United States using the Interview and Diary Portions of the 1980, 1990, and 1997 Consumer Expenditure Surveys
2. **Laura Blow,** Household Expenditures Patterns in the UK
3. **Adriaan Kalwij & Wiemer Salverda,** Changing Household Demand Patterns in the Netherlands: Some Explanations
4. **Javier Ruiz-Castillo & María José Luengo-Prado,** Demand Patterns in Spain
5. **Marijke van Deelen & Ronald Schettkat,** Household Demand Patterns in West Germany:1978-1993*
6. **Francois Gardes & Christophe Starzec,** Household Demand Patterns in France 1980-1995
7. **Francois Gardes & Christophe Starzec,** Income Effects on Services Expenditures
8. **Adriaan Kalwij & Steve Machin,** Changes in Household Demand Patterns: A Cross-Country Comparison
9. **Laura Blow, Adriaan Kalwij & Javier Ruiz-Castillo**, Methodological issues on the analysis of consumer demand patterns over time and across countries
10. **Mary Gregory & Giovanni Russo,** The Employment Impact of Differences in Demand and Production Structures
11. **Ronald Schettkat (Research Assistance: Joep Damen)** Demand Pattterns and Employment Structures, An Aggregate Analysis
12. **Andrew Glyn, Wiemer Salverda, Joachim Möller, John Schmitt, Michel Sollogoub** Employment differences in services the role of wages, productivity and demand
13. **Ronald Schettkat & Wiemer Salverda,** Demand Patterns and Employment Growth Consumption and Services in France, Germany, the Netherlands, the United Kingdom and the United States Concluding Summary